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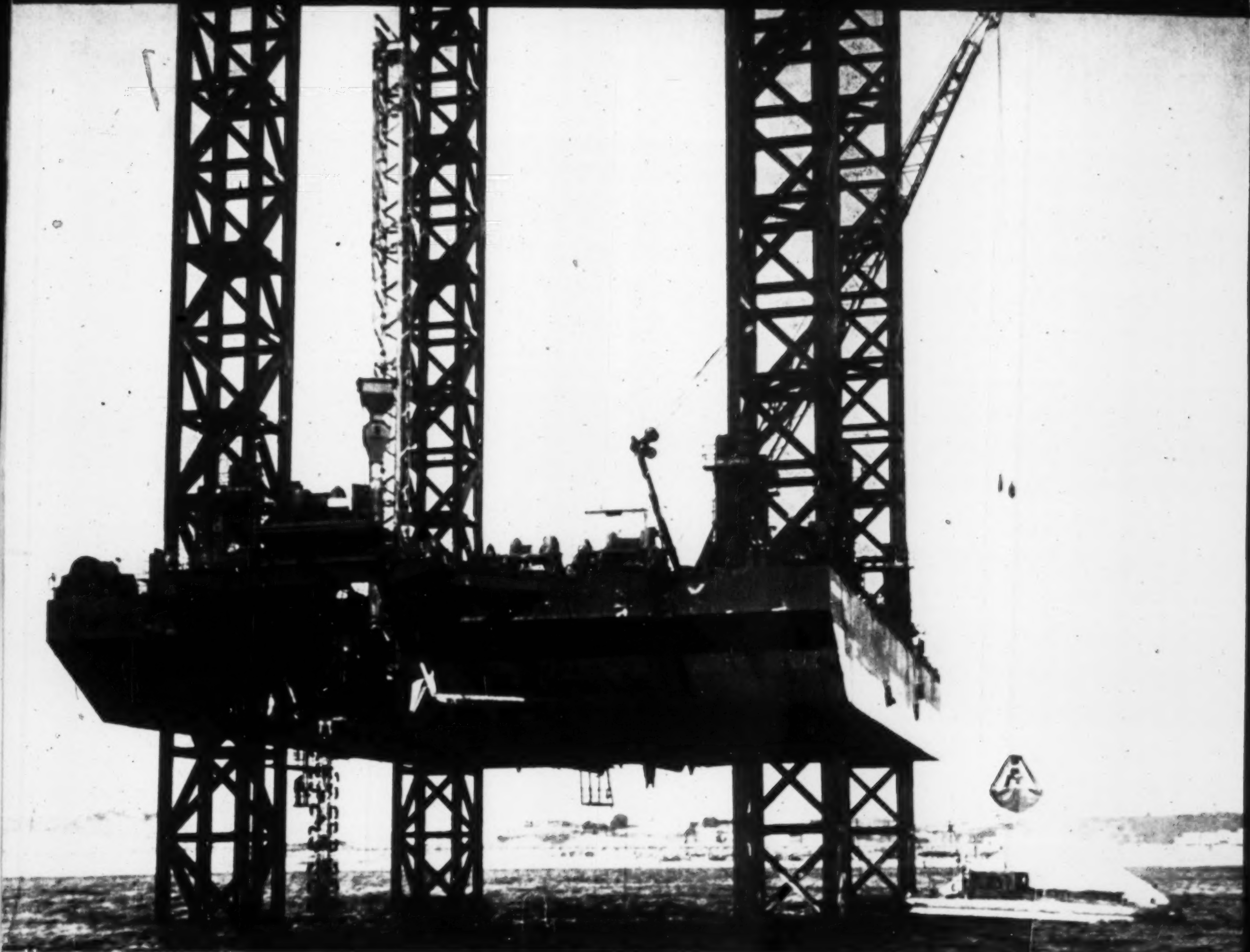

Ocean-going platform: Key to pipelaying in deep water p.38

STEVENS RICE ..... GS N
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New steels are born at Armco

ARMCO PIPE
Helps Construction at Glen Canyon Dam

The Bureau of Reclamation's gigantic Glen Canyon Dam, on the upper Colorado River in northern Arizona is one of the world's most notable current construction projects.

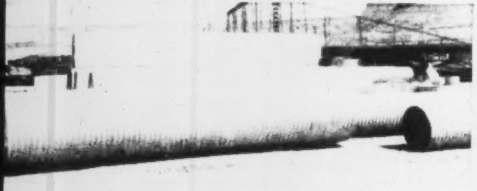
Armco Corrugated Metal Pipe, and Armco MULTI-PLATE® Pipe has been specified for various applications on this $325,000,000 project. Some of the more interesting uses are pictured on this page.

These same Armco Corrugated Metal Drainage Structures find wide use on the nation's interstate highway system; in municipal sewers; under railroads; and in industrial applications. For descriptive literature, write us. Armco Drainage & Metal Products, Inc., 5619 Curtis St., Middletown, Ohio. In Canada: Guelph, Ontario.

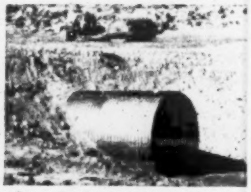
▲ Half round Armco Conveyor Cover protects belt at this batching plant for housing project.

This 1000-foot long MULTI-PLATE Arch reclaim tunnel carries aggregate from storage piles 80 feet high over this structure.

Stockpiles of Armco Pipe, in various diameters, that were installed as culverts under utility roads. ▼



Sections of MULTI-PLATE Pipe, ready for installation as conveyor housings for excavated aggregate.



▲ Twenty miles from dam site, a MULTI-PLATE Pipe is installed under access road.

At bottom of canyon was a 10-foot diameter Armco MULTI-PLATE Pipe that served as a safe walkway while bridge was constructed overhead. ▶

Prime Contractor for Glen Canyon Dam and Power House: Merritt-Chapman & Scott Corporation

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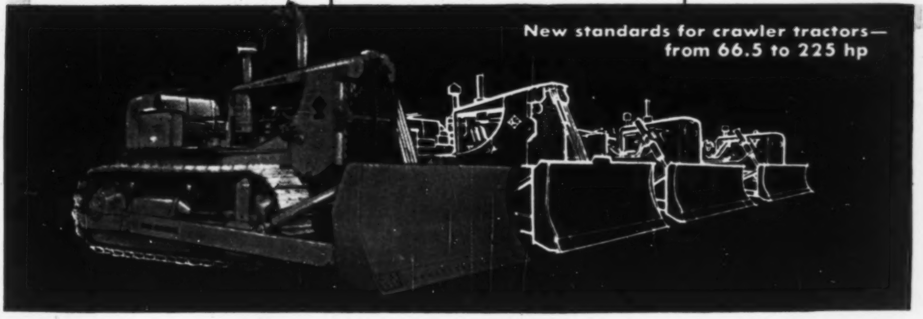
How to get more tractor for your dollar

In the chart below are five important crawler tractor advantages. These features have earned recognition by all makers of crawler tractors—one or more are now included in their latest designs. It stands to reason that the more of them you get on your next crawler, the more it is worth to you.

Advantage	What it means to you	Where you get it
All-steel main frames	Power train protection Better equipment mounting Better weight distribution	Allis-Chalmers is the only manufacturer offering main frames in *all* models. Two other manufacturers now offer them in one model.
Permanent lubrication of truck wheels, idlers and support rollers	No more wasted time greasing these track components	Allis-Chalmers is the only manufacturer offering permanent lubrication of truck wheels, idlers and support rollers on *all* models. One other manufacturer offers permanent lubrication on three models.
Torque converter drive	Matches power to load automatically Transmits power smoothly Less shifting	Allis-Chalmers pioneered it in crawler tractors in 1940 . . . offers it in two tractor shovel models, two tractor models. All other major manufacturers now offer it as optional equipment in one or more models.
Double reduction final drives	More clearance Longer gear life	Allis-Chalmers is the only manufacturer offering double reduction final drives on *all* models. One other manufacturer offers it on three models.
True unit construction	Faster service Easier access to all major assemblies	Allis-Chalmers is the only manufacturer offering true unit construction in *all* its models. Two other manufacturers now offer modified unit construction in part of their lines.



Here's proof that other manufacturers of crawler tractors have chosen to "follow the leader" with Allis-Chalmers engineering . . . and that your Allis-Chalmers dealer is the man to see for top value in crawler tractors. He'll be glad to demonstrate the model of your choice. It will have more industry-approved advantages than any other unit near its size. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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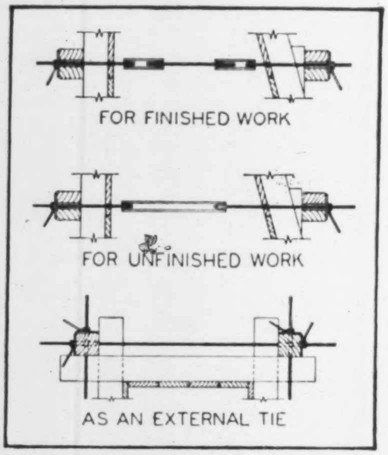
Continuous Threaded Lagstud



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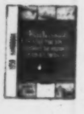

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EIGHTY-FIFTH YEAR OF PUBLICATION

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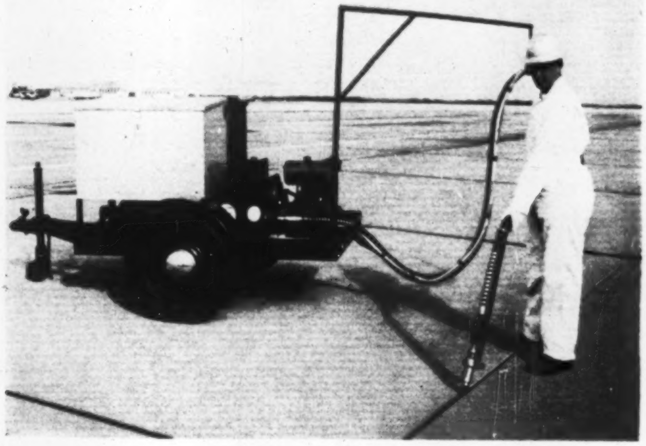

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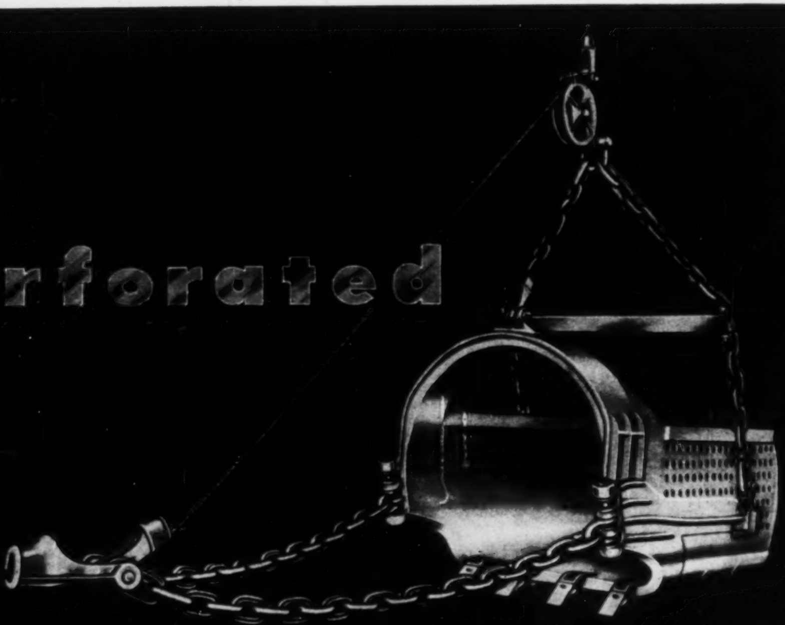

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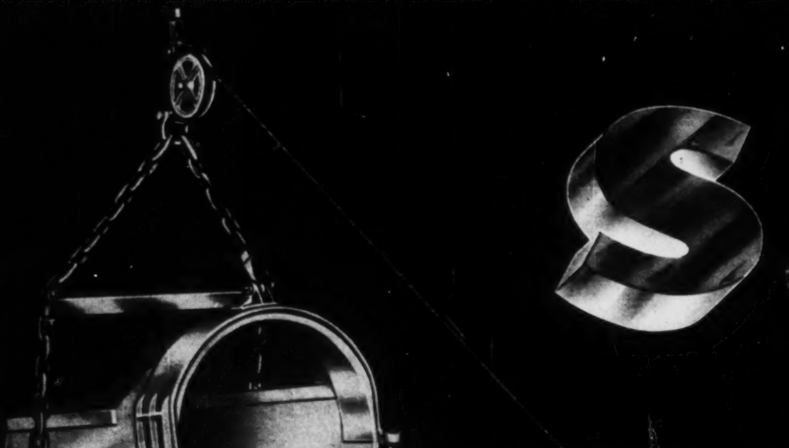

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B.F. Goodrich tires handle the tough jobs at mammoth Niagara Power Project

UNDER construction at Niagara Falls, N.Y., are the powerhouse, waterways, reservoir and intake—all part of the gigantic $720-million Niagara Power Project. Shown above: site of 110′ x 50′ excavation for one of the twin, 46′-wide, covered intake conduits. On the job: a fleet of trucks equipped with B.F.Goodrich tires and owned by Merritt-Chapman & Scott Corporation, largest contractor on the project.

These trucks haul ton after ton of rock and overburden from the excavation to the spoils area, work round-the-clock, 6 days a week, under severe operating conditions. In spite of this, B.F.Goodrich Rock Service tires are still going strong after 3,135 hours of service!

The Rock Service tread is specially-compounded to resist rock cuts and snags. Massive double-chevron cleats give extra traction in forward or reverse. Thanks to the special B.F.Goodrich FLEX-RITE NYLON cord body, Rock Service tires are virtually immune to heat blowouts and flex breaks. Result: you get longer tire life—more retreadable tires!

Other B.F.Goodrich products at work on the Niagara Power Project are conveyor belting, air hose, protective clothing and footwear. Maintenance and service programs for tires and industrial products are also in operation—all part of the new B.F.Goodrich Unified Contractor Program. No matter what your off-the-road job, B.F.Goodrich is ready to serve you—and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F.Goodrich Co., Akron 18, Ohio.*

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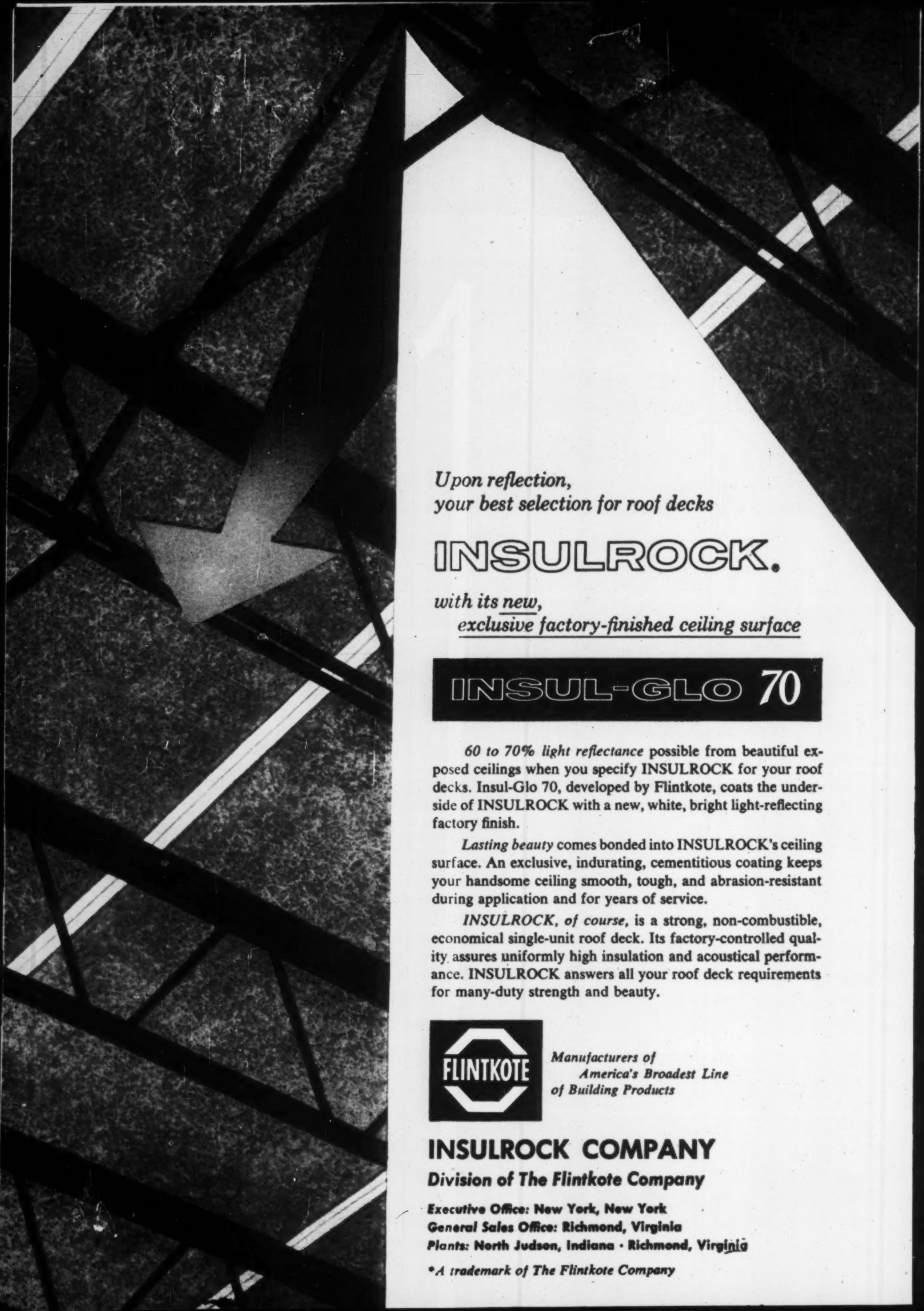

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Reader Comment

More Trouble for Contractors?

SIR—We are pleased to furnish you the following information on our firm, although we are probably too late for the article (on "top contractors").

Our firm was founded in 1894 and has been functioning continuously ever since. We specialize in all types of building structures.

We are a medium sized family owned firm, in which sons have replaced fathers and grandsons replaced sons, not only on the management level but also at the worker level. We have people who have been in our employ for fifty years and people who have served an apprenticeship with our firm and have worked continuously for us ever since. There is, therefore, a close bond between management and what you might call labor. We, incidentally, are a union firm.

We feel that our industry is in for even more trouble than we have experienced. We have passed through the greatest volume of construction in history since World War II, and generally speaking, real money has not been made.

Yet, the speculative housing field operated by doctors, lawyers, insurance men, and almost everyone but construction men has boomed. In general, the old line construction outfits did not join the parade.

During the period of which I speak, we gradually lost respect for quality work, and most clients were not willing to pay for good work and good service. Thus the old reliable, qualified firm was forced to compete with the incompetent firm and if there was a price differential, the low man would win out. Clients who bought quality for years suddenly went all out for price.

Money was easy to get during this period and credit went crazy. We, therefore, saw hundreds of new construction firms come into being. Some of these were very good firms, most were not. This, in our opinion, is the main trouble with the industry today. *There are far too many contractors.*

This has caused the ridiculous competition for work which has seen job after job go far below engineering estimates and prices which owners were quite willing and fully expected to pay.

Our costs, particularly labor costs, are rising continuously. Yet, bid prices are getting lower all the time. It is our feeling that incompetent workmen coupled with unscrupulous labor leaders have developed feather bedding to a fine art. We do not believe the contractor has fought enough to keep labor in line. No one is willing to take a strike and we are not nearly so well organized as our employees. We have sat back and allowed government in league with the unions walk all over us. We feel that contractors have contributed heavily to their own woes by being selfish and short sighted.

In short, contractors today try to see how cheaply they can work instead of how much profit they can make. We feel that contractors have to fight harder to curb labor excesses and protect the public. More important, they must begin to bid intelligently. We are all in business to make money and if we can't make money, we won't stay in business—its as simple as that. It is also true that you must put a profit on a job in order to end up with one. This goes for subs as well as generals.

JOHN E. HEALY II
John E. Healy & Sons, Inc.
Wilmington, Del.

▶ For the year 1958 Hardaway Contracting Co. did a volume of business totaling $22.1 million, and Sam Finley, Inc., an affiliate, a total of $9.2 million, with a combined total of $31.3 million.

B. H. HARDAWAY
Hardaway Contracting Co.
Columbus, Ga.

Too Late for Lateral Lacing

SIR—"Factory Frame Flops" (ENR May 14, p. 29) is the story of one that "didn't get away" with the recklessness with which design and construction procedures are infested today.

Skimpy columns and rocker-type bearings seem to be the trend. When a relatively heavy deck is supported on columns at considerable heights, the columns must be stiff enough to prevent the heavy, suspended mass from moving. An earlier correspondent pointed out that columns should be capable of resisting a moment based on one-third of the deck's weight.

To what extent masonry would stiffen the structure is dubious. I recall a job where the Army Engineers were insistent, in saving a few pounds of war-scarce steel, that angle-star posts be used to support a battery of heavy evaporators at an ordinance plant. The evaporators had to be lashed to the structural frame to keep them from toppling. Here again, the vertical load was the only consideration.

Many shops ship columns with warped, welded-on bases to the job. This practice, combined with unpredictable field-prepared bearing surfaces, whether they are leveling plates or pregrouted, results in anything but a proper bearing. I have seen gaps between the pre-leveled bearing and the bearing plates that would hold a lead pencil.

With these conditions prevailing in construction, it is a wonder that there aren't more "Flops".

All of this confirms G. C. Schwesser's contention (ENR April 23, p. 9) that the owner should protect himself by having a coordinator to check plans and supervise construction. I would go one step further and recommend that the coordinator be the top man on the totem pole and not the architect, as is usually the case.

You may recall the days of "free engineering" and be thankful that they are in the past. However, when you made a competitive design then, it was subject to the uninhibited criticism of your competitors with no holds barred. Today there seems to be an aura of professional courtesy not to criticize, notwithstanding the approval recently given by the president of the American Society of Civil Engineers to criticism.

WILLIAM FLESHER
Philadelphia, Pa.

SIR—Editorial comment on the collapse of a one-story steel-frame industrial building (ENR May 21, p. 128) is timely. Too many erection failures resulting from similar circumstances have occurred in recent years to go unnoticed. While these failures represent but a minute proportion of new buildings, nevertheless the large volume of construction during the past decade has produced too many such accidents to warrant complacency.

Before effective steps can be taken to correct the situation, a clearer understanding of the cause is needed.

Commenting on an earlier failure in Toronto (ENR Oct. 30, 1958, p. 8), Mr. Sharounis infers that it may have resulted from a weakness in current column formulas, a point which Mr. Le Messurier picks up (ENR Dec. 25, 1958, p. 8). Both correspondents have thus obscured the real problems with an issue of relative unimportance.

A subsequent engineering report assesses the true weakness—insufficient lateral support during construction.

It appears that the Westbury failure (ENR May 14, p. 29) was also due to insufficient lateral support during construction. Presumably, after the exterior walls had been constructed there would have been no need for the temporary cables mentioned in the report.

In your editorial, you suggest the building codes should be revised to include firmer lateral-bracing require-

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ments. You note that the AISC Specification requires that "Proper provision shall be made for stresses caused by wind, both during erection and after completion of the building;" but then you state that these words can hardly be interpreted as specifically requiring resistance to lateral forces. It would appear to the writer that making proper provision for the stresses caused by a given force and providing resistance to that force are two ways of this.

Considering the variety of ways that the lateral stability of a completed structure can be assured, it is questionable whether "proper provisions" can be spelled out in sufficient detail to assist materially in code enforcement, without needlessly handicapping the competent designer. Such provisions must of necessity remain largely a matter of good judgement. Therefore, it goes without saying that determination of proper provisions to suit a particular case should be delegated only to duly qualified persons. But responsibility for interpretation should not be divided between design office and field without close liaison. Each must have a clear understanding of the other's plans.

Finally, it should be noted that all too frequently designs that avoid the use of rigid framing or a complete system of permanent steel bracing, thus requiring the extensive use of temporary guys for some time after completion of the steel erection, actually afford little if any over-all economy.

T. R. Higgins
Director of Engineering and Research
American Institute of Steel Construction
New York, N. Y.

▶ Credit ENR with an assist for its "Plea for Supervision" editorial (ENR March 5, p. 104) which underlined the need for the designer to inspect field work.

This office has long advocated designer-inspected projects. Housing authorities and similar public or quasi-public bodies in charge of many projects often employ full time "field inspectors." However, it is no disservice to this personnel to point out that the skill and experience of most of them is fashioned around the work of the construction engineer. Their design experience, if any, is often outmoded by today's design techniques.

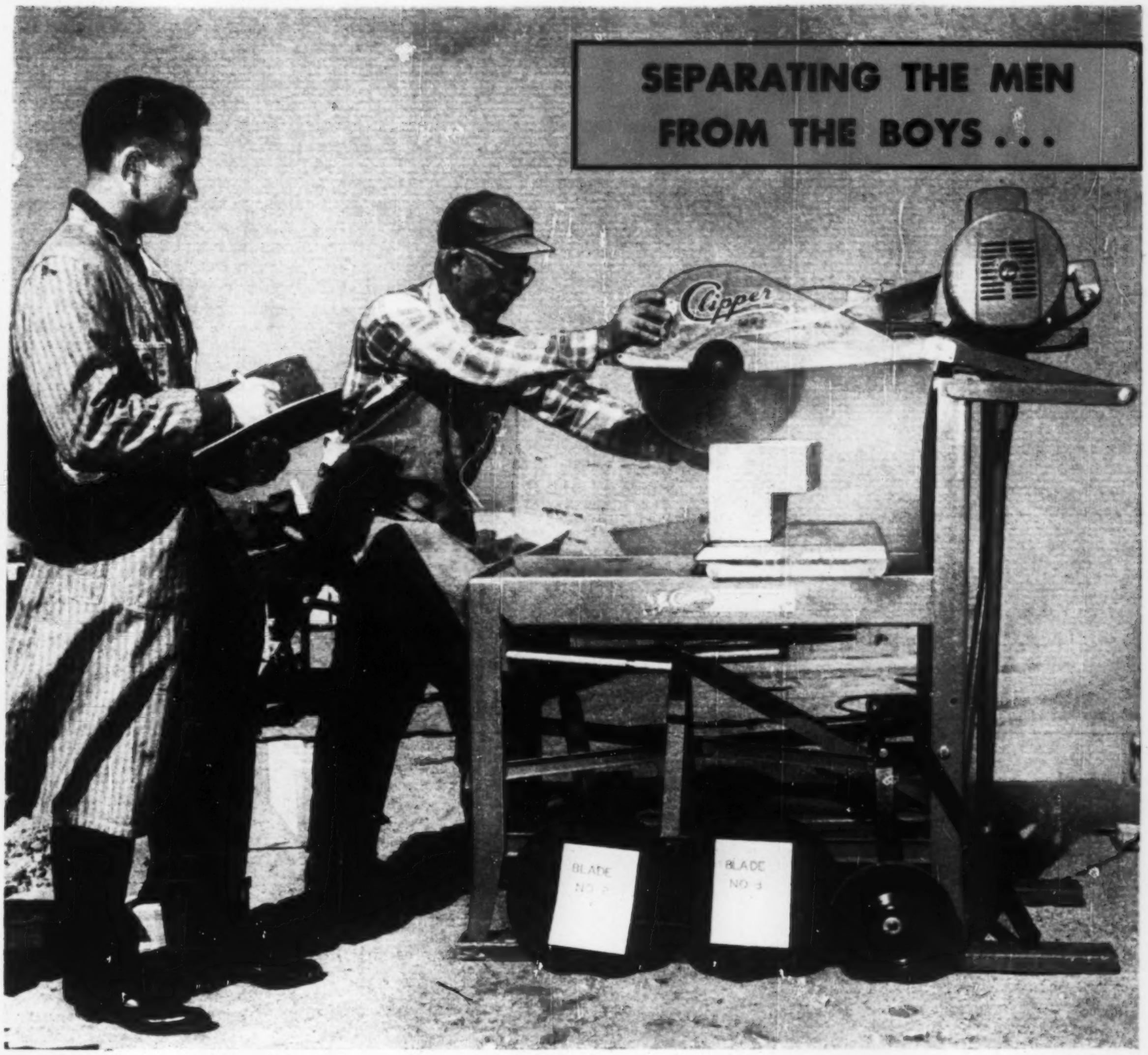
Especially for multi-story, flat plate buildings, we should insist upon inspectors who have a full background knowledge of the particular projects and a continuing awareness of the need to place every reinforcing bar just where the drawings require.

We agree with ENR. Field inspection should be the responsibility of the designer. Fees should provide for the inspection; this practice will give both maximum quality and economy.

David Bloom
Consulting Engineer
Philadelphia, Pa.

(Reader Comment continued p. 10)

SEPARATING THE MEN FROM THE BOYS . . .



In most every field a boy is often sent to do a man's job because it costs a little less at first. In every case, experience and stamina are finally needed to get the job done faster — and at lower cost.

It's the same with masonry cutting blades. There's a lot of "boy" blades being sent to do a man-sized cutting job, but there's one sure way of separating the two — put them to the test!

For your "men-from-the-boys" test, call your nearest Clipper Factory Trained Representative. He's on call day or night with just one job: serving your masonry and concrete cutting needs with Premium Quality Diamond, Break-Resistant and Abrasive Blades. He'll conduct an eye-opening "separation" test right on your job, without cost or obligation, and will UNCONDITIONALLY GUARANTEE that man-sized Clipper Blades, will out-cut . . . out-perform . . . and out-last any other blade.

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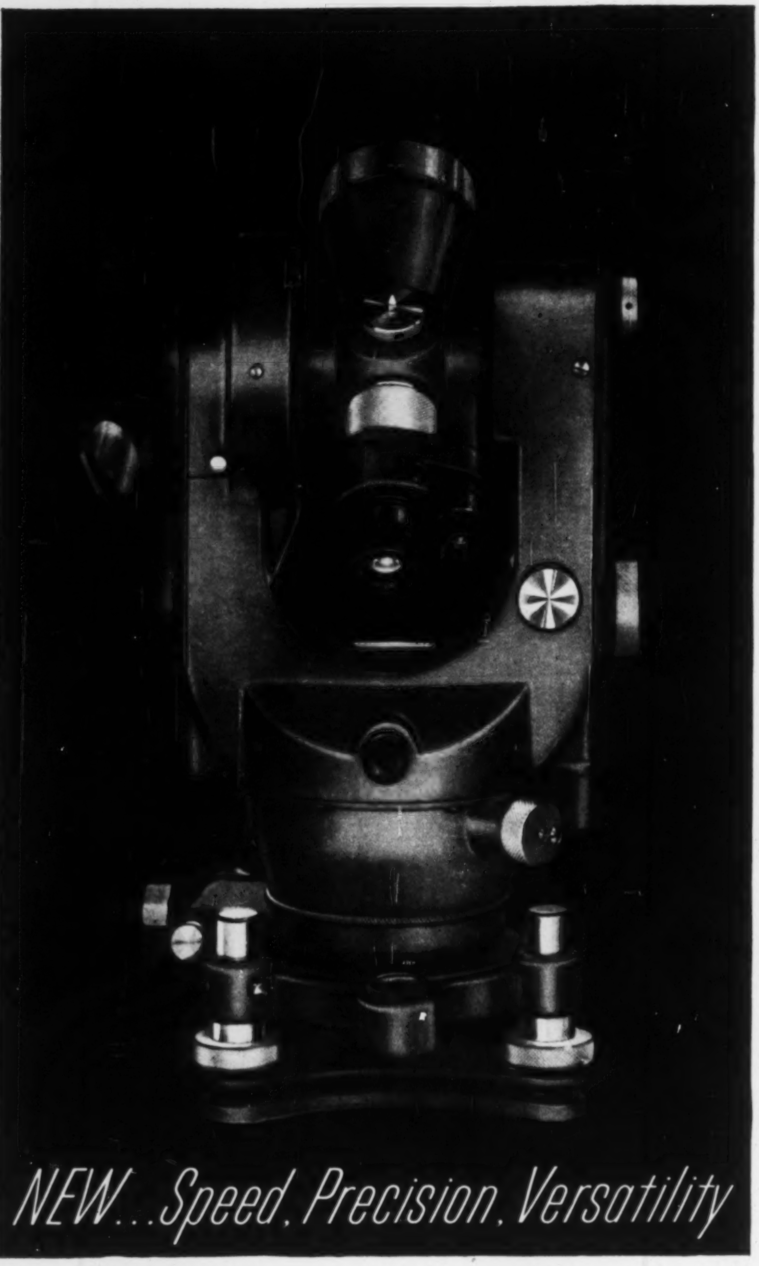

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▶ Your editorial pointing up failures of temporary construction facilities and your campaign for closer supervision from the design engineers or architects, while desirable in itself, is not the solution to this problem.

Engineers and architects who place themselves in the position of telling the contractor how to do the job are immediately assuming a position which is generally beyond the scope of their responsibilities to clients.

In addition, they are assuming the collateral, and legally enforceable, responsibility to the contractor that the methods they are requiring will result in the contractor earning his anticipated profit.

This clearly cannot and should not be a part of the design responsibility of a project.

Also, the designer who attempts to dictate completely the methods of construction eliminates from the job the savings he might obtain by utilizing the contractor's experience and know-how.

The system of competitive bidding for construction jobs had developed some rather clear cut areas of responsibility, and rightly so:

The designer assumes responsibility to the owner that the completed structure will be sound and that it will serve the purpose intended.

The contractor assumes responsibility for constructing the job in compliance with the plans and specifications. Usually in doing so he is motivated by the desire to make a few dollars for himself on the operation.

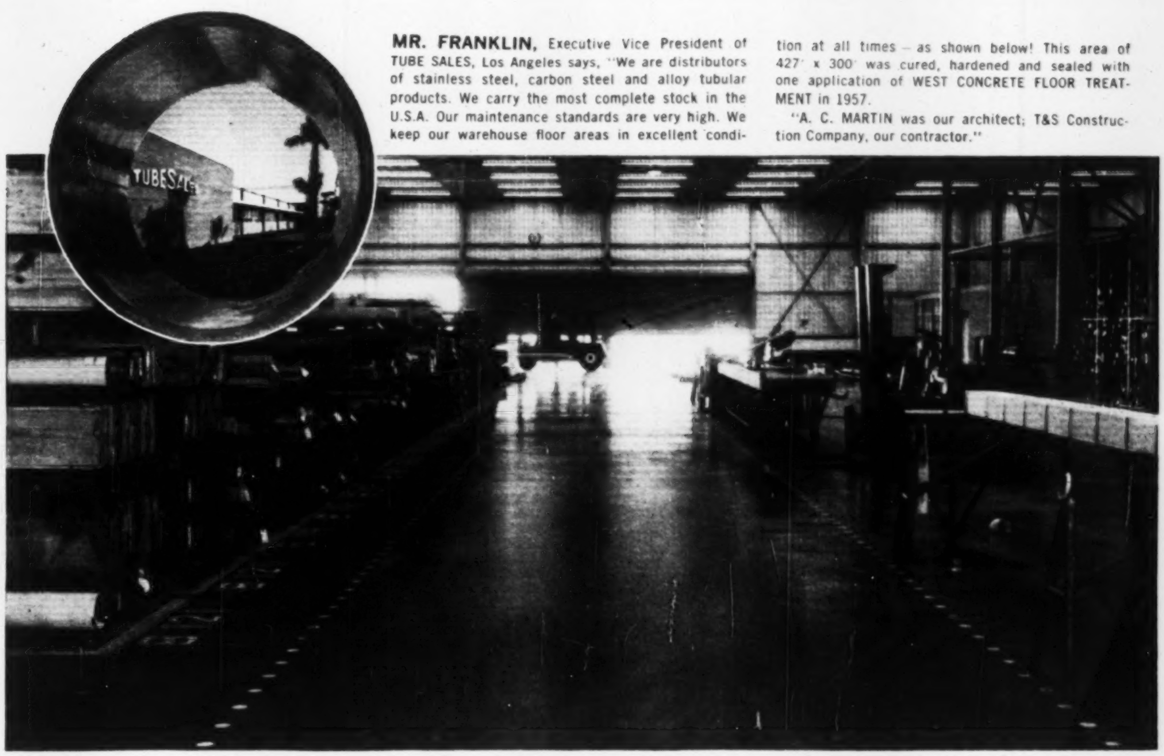
When a contractor undertakes a project for a fixed price, then the methods and facilities which he uses to obtain the required construction are, strictly speaking, his business.

If the methods or temporary facilities used by the contractor fail to produce the specified structure, the cost of correcting such errors is invariably his. Few responsible contractors will deliberately assume the added risk of failure of temporary facilities. More often they are inclined to go the other way and build them, as on old carpenter foreman of mine put it, "Hell for Stout."

Unfortunately, in this highly competitive age few people can afford the luxury of building anything "Hell for Stout." There must always be an attempt to obtain a balance between economy and complete safety and the solution to this problem frequently determines the profit or loss for a contractor on a job.

An increasing number of contractors are realizing that it pays them to engineer their temporary facilities. It pays in safety and it pays in economy. But we should realize that there may always be some who will require a failure to convince them of the wisdom of employing competent technical service.

I believe the solution to this problem is not shifting additional responsibility onto the design engineers and architects but instead requiring the contractor, whose responsibility it really is, to em-



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WEST Concrete Floor Treatment enables newly-laid, wet concrete to retain 95% of its moisture. This permits it to cure and harden while sealing the surface against acids, oils, greases and other foreign matter. This incongruous aspect of holding back most of the moisture while permitting some moisture to escape slowly is the key to this product's amazing success.

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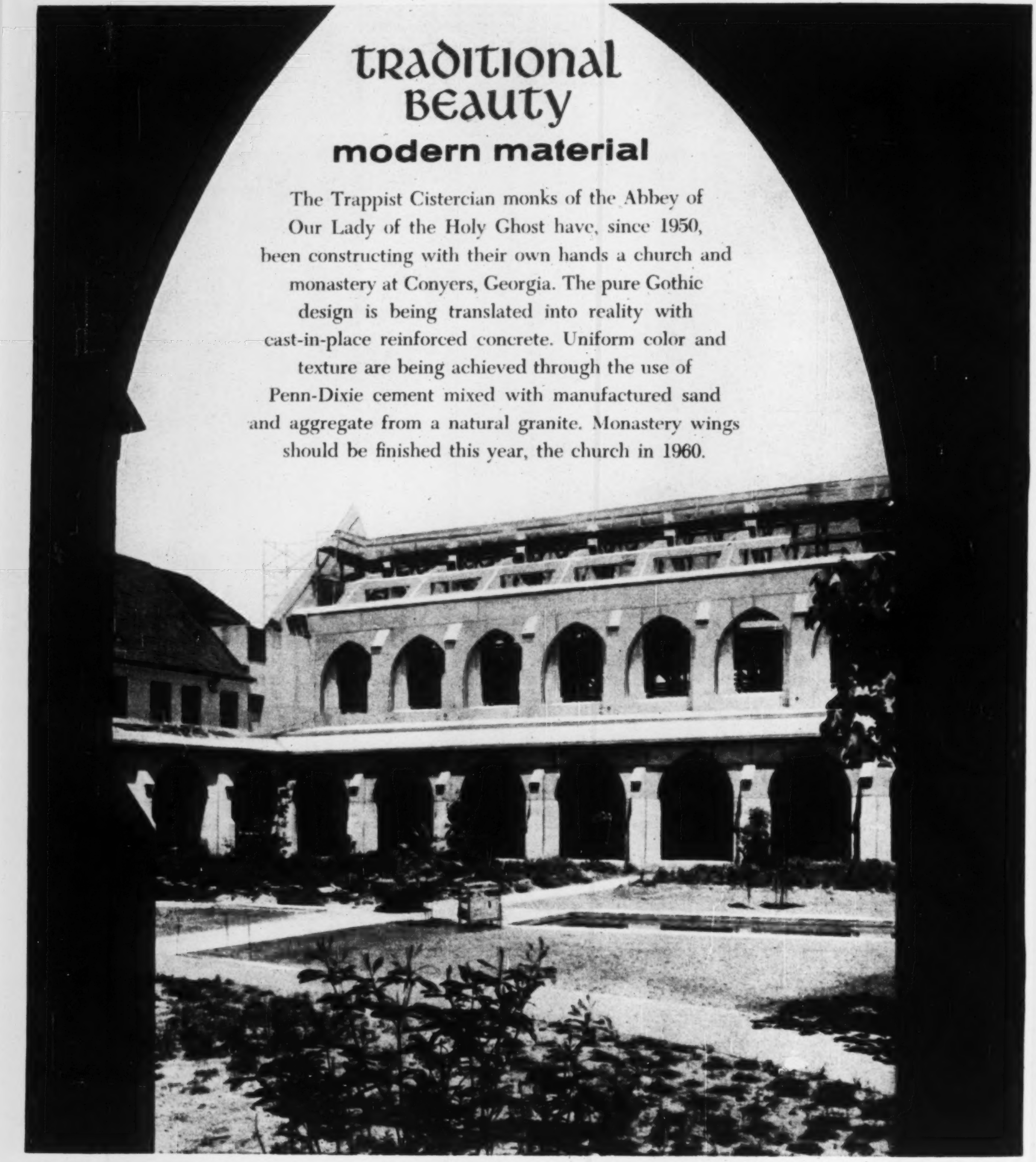

traditional Beauty

modern material

The Trappist Cistercian monks of the Abbey of Our Lady of the Holy Ghost have, since 1950, been constructing with their own hands a church and monastery at Conyers, Georgia. The pure Gothic design is being translated into reality with cast-in-place reinforced concrete. Uniform color and texture are being achieved through the use of Penn-Dixie cement mixed with manufactured sand and aggregate from a natural granite. Monastery wings should be finished this year, the church in 1960.

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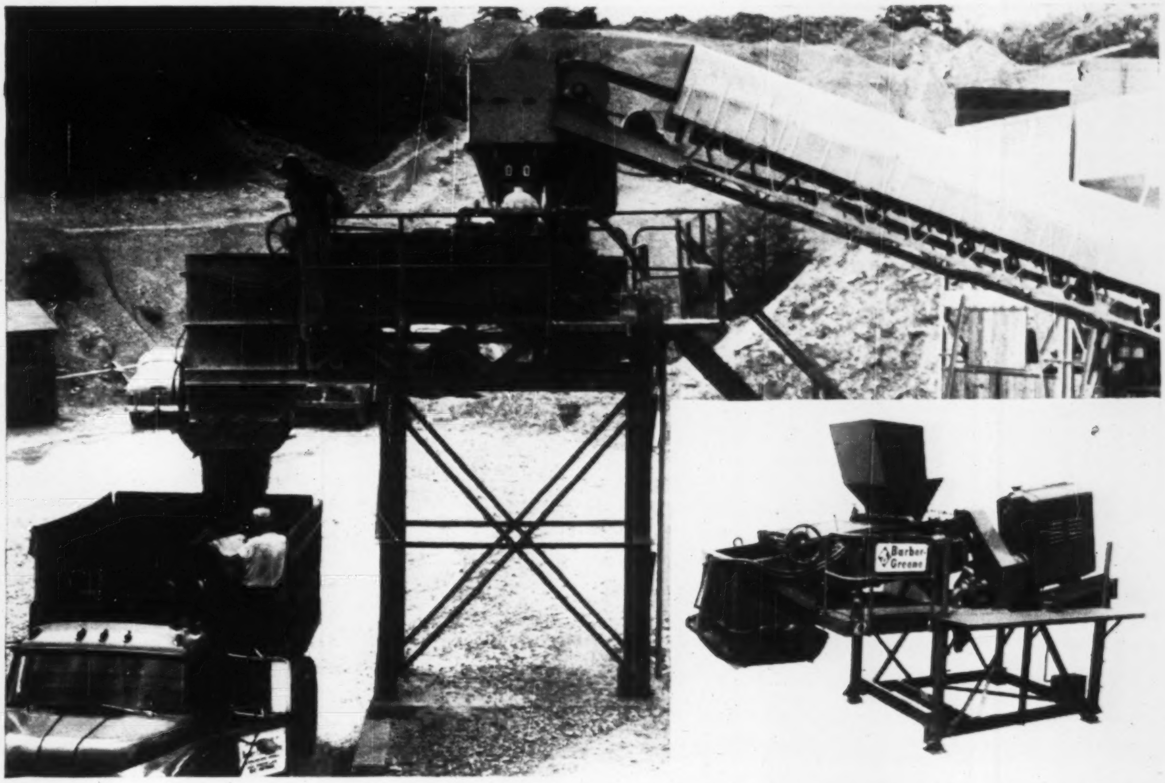

One of the many high capacity Barber-Greene Model 828 Stabilization Plants now setting production records. Inset shows new Model 824.

New Barber-Greene Stabilization Plants provide record-setting capacity and economy

Cost-conscious contractors everywhere are meeting increased demands for base material with new high-capacity, low-cost Barber-Greene Stabilization Plants. These plants require less equipment and labor than "on-the-road" mixing methods . . . deliver greater accuracy in proportioning and water content . . . are less dependent on weather . . . consolidate material-handling.

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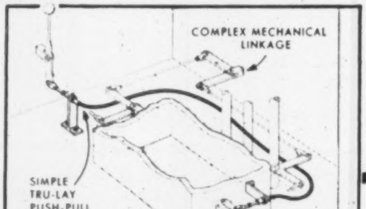

"Solid as a rod but flexible as a wire rope" is a good description of TRU-LAY PUSH-PULL REMOTE CONTROLS. This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all control elements . . . greatly simplifies installation of controls by reducing the number of working parts . . . damps out noise and vibration. Versatile, accurate, adaptable, rugged . . . they are the ideal remote controls for construction equipment.

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ploy competent engineering in the design of his temporary facilities. This could be accomplished quite simply by requiring that plans for all temporary facilities for construction of a project be prepared under the supervision of a registered engineer.

ROBERT L. MITCHELL
River Forest, Ill.

Editor's Note: ENR advocates construction inspection by engineers to insure compliance only with design requirements but not to tell the contractor how to build.

Saving on/by Consultants

Sir—Your article on "How Michigan Saved $3 Million" (ENR May 7, p. 22) cannot go unchallenged.

Mr. John C. Mackie, Michigan State Highway Commissioner, should substantiate the claim, by publishing comparative data, that he saved one million dollars on highway work by eliminating outside consultants and using department personnel instead. Further, that he saved more than one million dollars by increased use of department forces instead of consultants.

The Hoover Commission Report established the fact that the cost of engineering work performed by public agencies averages 16% of construction cost. Mr. Robert Moses, Construction Coordinator of New York City, has said and written that engineering work done by public bodies often exceeds 18% of construction costs. The City of Detroit established the fact that some of its public works engineering amounted to 19% of construction costs. There is no evidence that the Michigan State Highway Department is any more efficient than the other public agencies whose experience was used to establish the percentages noted above.

By contrast, consulting engineers in Michigan are even now producing engineering work for the Highway Department for fees in the normal 6% range. Inevitably, these fees reflect the usual overhead costs of all private enterprise, such as taxes, rent, insurance, equipment, supplies, transportation and administration.

Until Mr. Mackie offers proof of the claims reported in ENR, they must stand as unsupported statements which are denied by the weight of existing evidence.

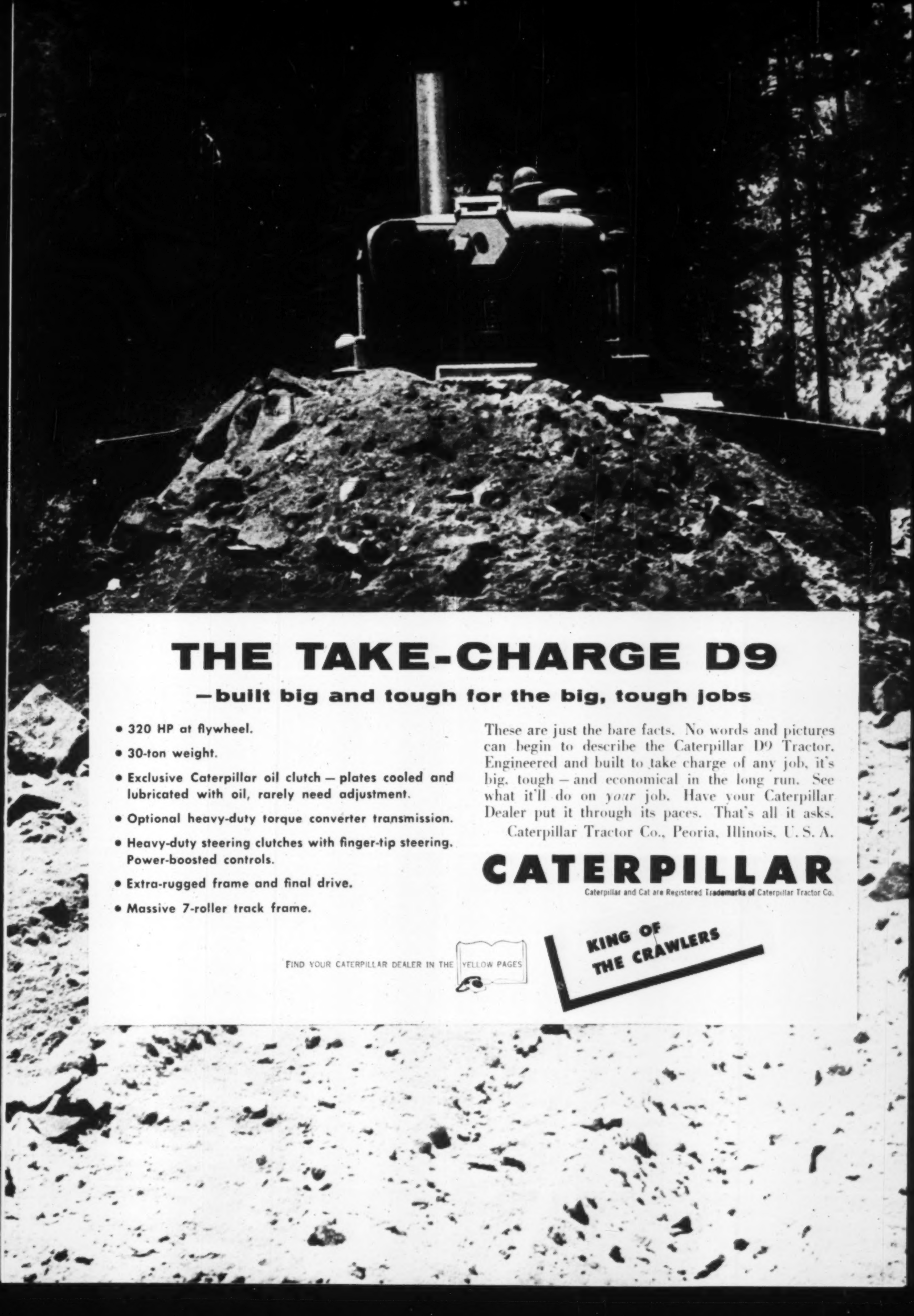
L. E. WINKELHAUS, *Director*
Consulting Engineers Council
Ann Arbor, Mich.

Editor's Note: For ENR's view on claims, see editorial, p. 92.

For Your Calendar . . .

Pacific Coast Builders Conference, annual meeting, Sheraton-Palace Hotel, San Francisco, Calif., July 6-9. Write: Rodney Radom, Convention Manager, Pacific Coast Builders Conference, 350 Post Street, San Francisco, Calif.

Western Resources Conference, University of Colorado, Boulder, Colo. July 13-17. Write: Committee on Western Resources, New Chemistry Building, Room 305, University of Colorado, Boulder, Colo.



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ENGINEERING NEWS-RECORD

Vol. 163, No. 1 July 2, 1959

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THE CONSTRUCTION WEEK

COSTLIER ALUMINUM?—You may be paying more for aluminum before fall. Here are the signs: Heavy demand, new labor contracts, and a current price described by the industry as "too low." Construction is aluminum's largest single market. Mill price of primary aluminum pig could go one to two cents above the current 24.7 cents per pound.

NEW ALLOY STEEL?—Several big steel producers are pushing research in a race to come out with a low-alloy steel made with niobium (columbium). Tests to date reportedly show only a small quantity of this element is needed to give structural steel high strength without impairing other desirable properties, such as ductility, toughness and weldability.

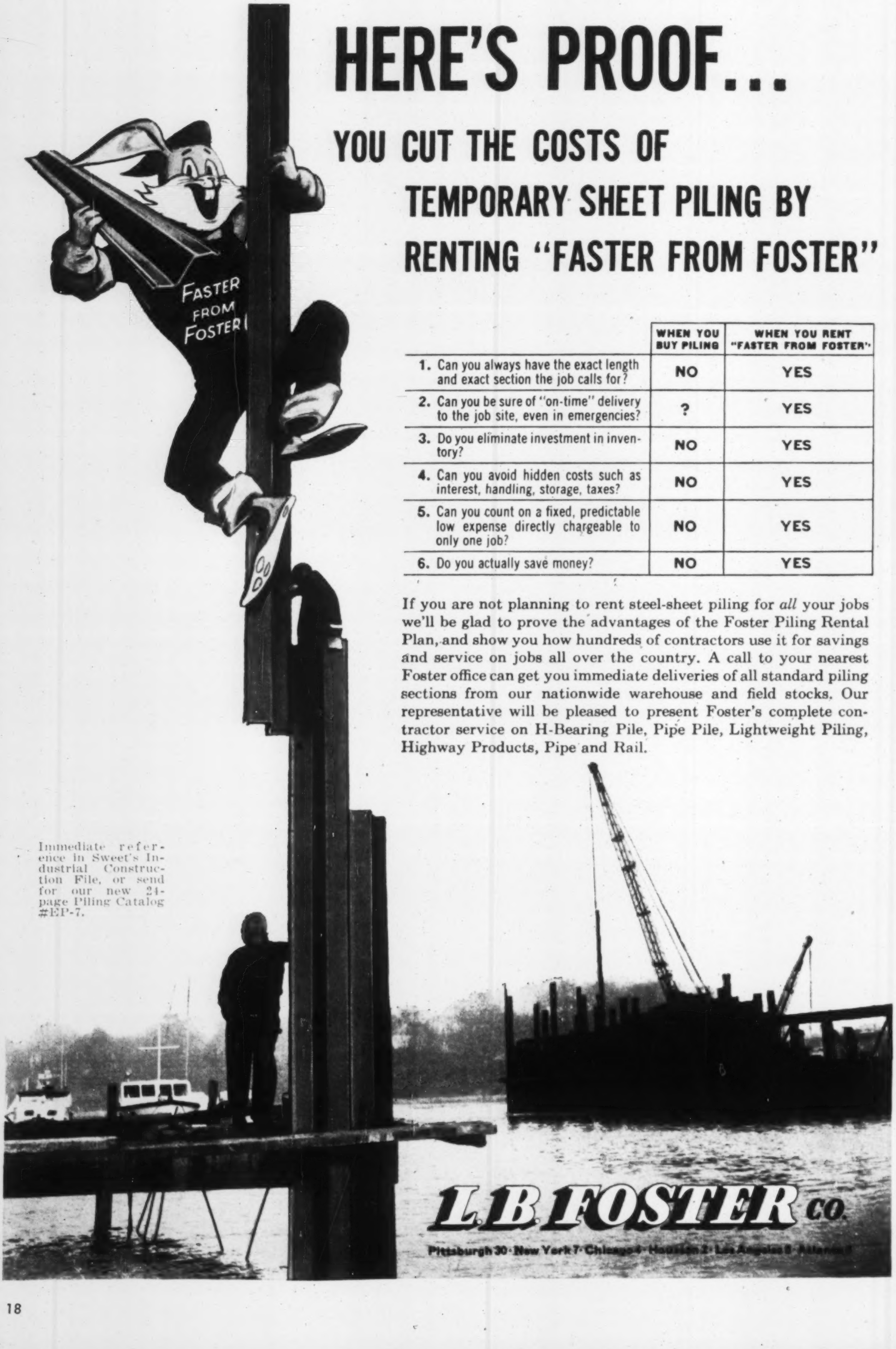
CLAMPING DOWN ON SCHOOL COSTS—You can expect more state legislatures to clamp down on "frills" in school construction. Architects may bear much of the criticism for costly design. Pennsylvania is considering a bill that would cut state aid as construction costs increase. (The theory: Districts that can afford more luxurious schools can probably get by with less state aid.) Vermont trimmed state control of local school construction to permit localities the option of simpler designs (ENR June 25, p. 32).

PUTTING ZIP IN THE ZEUS—The new military construction budget will pour $67.5 million into Nike-Zeus test facilities in the Pacific and in the U.S. The Army has been authorized to start work on a test range for the anti-missile missile.

BOMBER BASES STILL ABUILDING—The new U.S. budget earmarks $58.7 million for bomber facilities, $10.9 million for jet tanker facilities. These bases will be converted to handle the big B-52: Homestead AFB, Fla.; McCoy AFB, Fla.; Larson AFB, Wash.; and Schilling AFB, Kan. The Pentagon plans to spend even more for bomber bases in fiscal '61.

WANTED: SEWAGE PLANT STOPPERS—New York City is hunting the industrial firms whose illegal wastes have practically stopped treatment at Bowery Bay high-rate activated sludge plant. Copper, nickel and chrome wastes have destroyed the bacteriological process—but their sources are hard to find. The Department of Public Works has appealed to other city departments to help track down the violators.

A RECORD, BUT WHO NEEDS IT?—Wage boosts and a few price advances in lumber pushed construction costs to a new high as of June 25, ENR's cost indexes show. Construction Cost Index jumped six points to 805, based on 1913=100. This is the first time it topped 800. Building Cost Index went up one point to a record 551, also based on 1913=100.



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WASHINGTON OBSERVER

- **States are hurting for school money**
- **Federal airport funds will be tight**
- **Jury to check "identical bid" complaint**
- **Antitrusters move against copper merger**

● **Few states expect to be able to double their expenditures on education as recommended by some national authorities.**

Most governors report increasing resistance to higher local taxes on which new school construction depends. Of 25 governors who answered a House Education Subcommittee poll, only seven felt they could come "reasonably close" to doubling their efforts. They were New York, Washington, Nevada, Maryland, Illinois, Hawaii and Connecticut.

Doubling the nation's $15-billion annual investment has been called for by the 1958 Rockefeller brothers report on education and the President's Science Advisory Committee. Secretary Arthur S. Flemming endorses a 100% increase in "five to 10 years."

A recent ENR study shows that even the present rate of construction—which is unlikely to keep up without federal support—would leave a shortage of 68,000 classrooms five years from now (ENR June 25, p. 21).

* * *

● **Federal money for airport buildings will be hard to come by under the new federal aid law,** signed on Monday by President Eisenhower. It is a stopgap measure, allocating $63 million a year for two years.

Mr. Eisenhower made plain the money would be used for runways, taxiways and for safety facilities. He applauded the discretion given to the Federal Aviation Administration in deciding what airport facilities would come under federal aid. Terminal buildings could qualify, but the Administration intends to see that most if not all the money goes for construction needed to accommodate planes and passengers. Outright prohibition was written into the law against federal aid for parking lots, garages, commercial offices, night clubs, bars and lounges.

Allocations to municipalities under the new law will be made soon.

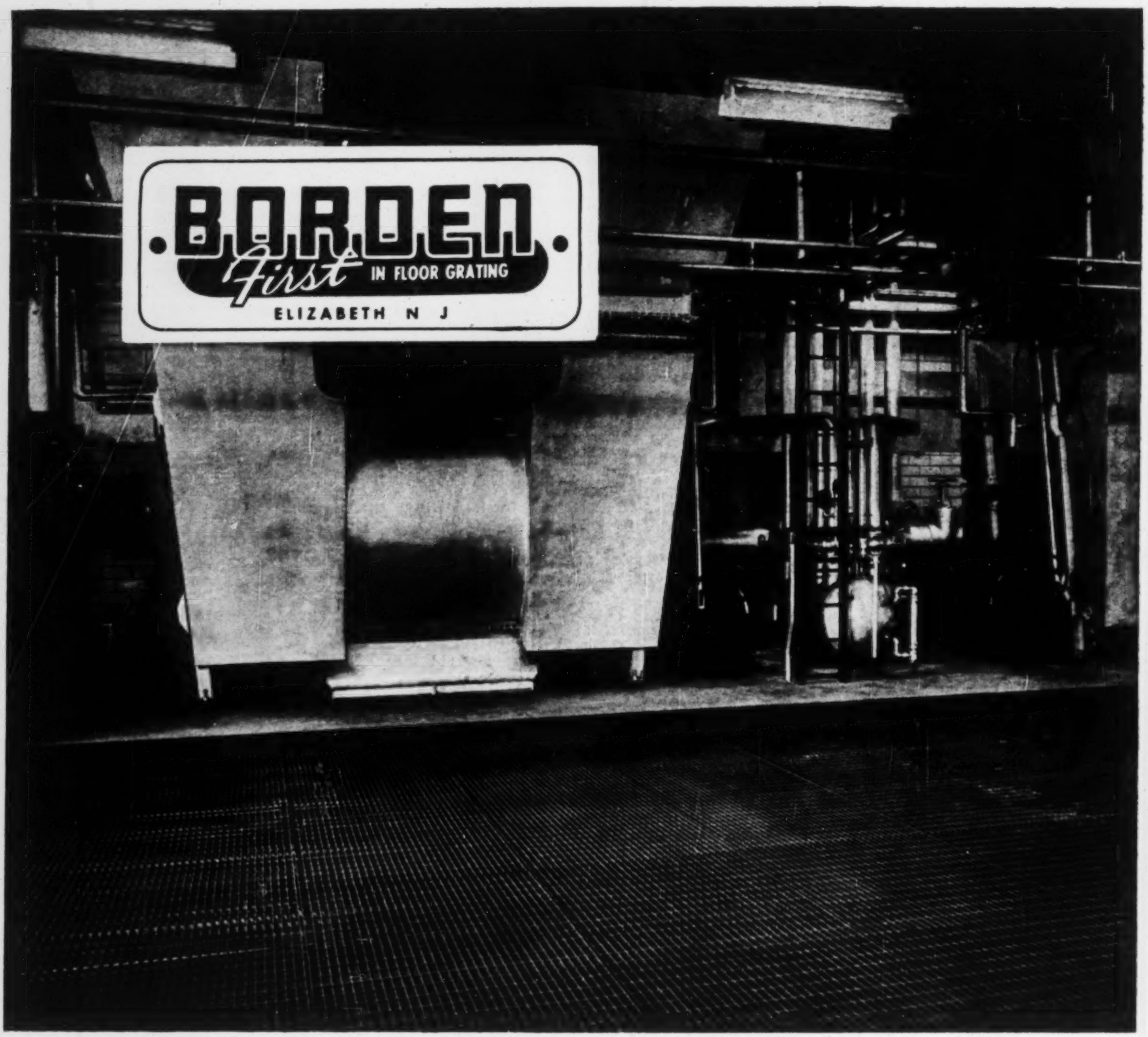
* * *

● **The charge by the Tennessee Valley Authority of "identical bidding" by domestic suppliers is being put to a federal grand jury.** The Antitrust Division of the Justice Department will present information to a grand jury in Philadelphia. Westinghouse, General Electric and 33 other suppliers have been subpoenaed. TVA recently complained that bids on wiring, switch-gear and larger equipment have been "identical."

* * *

● **The antitrusters keep plugging away at mergers**—the latest being a case against Kennecott Copper Corp.'s acquisition of Okonite Co., one of the largest independent fabricators of insulated copper wire and cable and other copper products. The government says the merger violates the Clayton Act, and will substantially lessen competition in the sale of copper products.

In filing the suit, the antitrusters picked the same federal court that last year ruled against a proposed Bethlehem-Youngstown steel merger.



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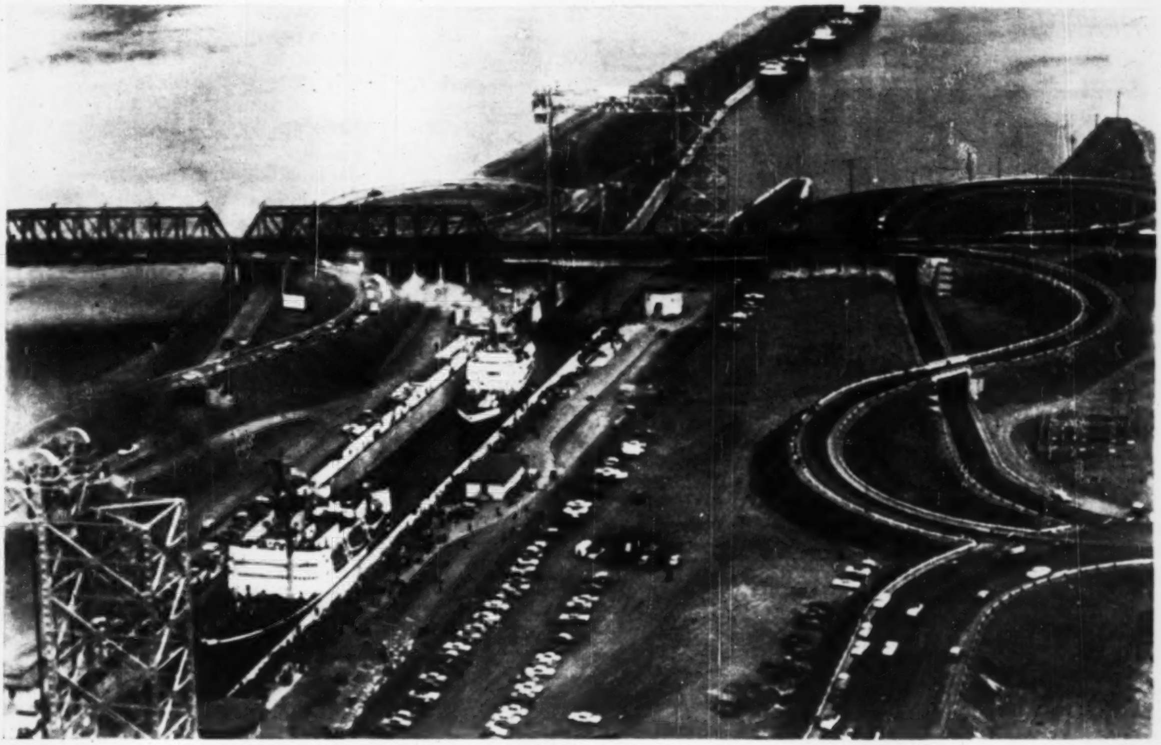
Plants at: UNION, N. J. — LEEDS, ALA. — CONROE, TEXAS — BEETON, ONTARIO



Seaway: A Lot More to Do

The St. Lawrence Seaway, dedicated along with the $650-million St. Lawrence Power Project last week, will need and will breed a lot more construction.

This is not to say that the $471-million Seaway project on the St. Lawrence isn't performing as designed. It is. You can discount all the stories you have read of the troubles the "salties" are having in the locks. The troubles have not been with the Seaway itself.

On the other hand, it is obvious, now that the pomp and ceremony are over, that construction must be stepped up in the lake ports the Seaway serves and in the Welland Canal, recognized bottleneck of the route. It may not be too early, in fact, to begin considering twin locks in the St. Lawrence itself.

As Queen Elizabeth II, President Eisenhower, Vice-President Nixon and Canada's Prime Minister Diefenbaker did their official chores at the colorful dedication ceremonies last week, the turbines churned out the horsepower and the tonnage kept moving up and down the continent's "fourth seacoast." A 28-unit task force of the U. S. Navy's Atlantic fleet moved into the earth's "eighth sea" for a summer of maneuvering. It was clear both power project and Seaway are going concerns.

In the international power structure—the Moses-Saunders dam and generating station—the Power Authority of the State of New York had put water through 15 of its 16 turbines, and the Hydro-Electric Power Commission of Ontario had turned 13 of its units.

All went smoothly, and the buildings at either end of the long, outdoor powerhouse were being finished off and landscaped as tourist attractions that will rank with TVA's best.

On the only U.S. portion of the Seaway along the St. Lawrence—the 10-mile Wiley-Dondero Canal with its Eisenhower and Snell Locks—visitors were coming by the thousands to see submarines and ocean freighters locking across the pastoral landscape of upstate New York's milkshed.

Similarly in Canada, Iroquois Lock, the two locks at Beauharnois and Cote Ste. Catherine and St. Lambert near Montreal were performing their function and attracting sightseers by the thousands even before the Queen and her royal yacht Brittania brought them out in the tens of thousands.

After some 60 days of operation, it was apparent that the new St. Lawrence channels and structures were taking over 30 ships a day without strain.

Martin W. Oettershagen, deputy administrator of the St. Lawrence Seaway Development Corp., called the two U. S. locks "hydraulic perfection." "The model tests of St. Anthony's Falls laboratory paid out," he said.

There is no noticeable turbulence as these locks begin to fill. It is impossible for the observer to see filling start in order to check the seven minutes it takes to make the 45-ft lift in each lock.

The early troubles?

Ernest Rossi, superintending engineer for Canada's St. Lawrence Seaway Authority on its Beauharnois and Iroquois locks, explains it this way:

The only canal-lock experience most of the ocean-going ships entering the Seaway have had has been Panama Canal experience. But in the Panama Canal, the ship is "taken captive" by the canal operators and held in the center of each lock by lines from each side. In Seaway locks, the vessel crew itself must tie the vessel to one wall of the lock after the master or his pilot

. . . Construction's job: Break the bottlenecks, improve the ports

has maneuvered the ship into place and to a stop.

Panama Canal locks, incidentally, are 110 ft wide; Seaway locks are 80 ft wide. The 80x860x30-ft (over the sills) dimensions of Seaway locks are figured to be able to take 80% of today's ocean-going vessels.

Whether the locks should have been wider, longer or deeper is an academic matter now. Economics and the influence of the 37-year-old Welland Canal helped decide the dimensions.

The Welland Canal is a sore point for Seaway operators. On the St. Lawrence they can explain the early delays by pointing to five days of ice and abnormal pile-up of first-day traffic. Strong crosswinds, inexperienced pilots, inadequate winching equipment and undesirable projections on the ships can explain the relatively minor mishaps that have since gotten so much attention.

Most of these same factors, plus fog and a freak accident, also account for delays at the Welland Canal, which has seen over 75 ships awaiting passage. Two weeks ago a rope fender projecting from a vessel's hull came loose, sank and jammed between a Welland Canal lock's gate and its sill. The lock had to be dewatered, the concrete sill repaired; the lock was shut down for four days, a delay the shippers could not blame on the Seaway Authority.

However, this Canadian agency is the brunt of much the current criticism of the Welland Canal, which is called the Seaway's one bad bottleneck.

A qualified observer in Cornwall, Ont., told ENR last week that a three-year construction project on the Welland Canal could start in two years.

The first need of the 27-mile canal is to have its five single locks given twins; three of its locks are already paired. Welland has seven lift locks and a so-called guard lock at its Lake Erie end. The Erie to Ontario drop is, of course, the whole 326 ft of the Niagara escarpment.

Here's how this need is explained by N. R. Danielian, president of the Great Lakes-St. Lawrence Association:

The Seaway itself, from Montreal to Lake Ontario, can handle 55 million tons of cargo per year (it must, if its tolls are to pay off the investment as required). This is an increase of 43 million tons over what Canada's 14-ft St. Lawrence canals carried previously. The Welland at present has a 46-million-ton-per-year capacity, but only 25 million of this was in excess in 1958. Therefore, the Welland can't take the 43 million tons of new shipping the St. Lawrence locks and canals must soon generate.

Economist Danielian reasons that a $150-million job of duplicating its five single locks will remove the Welland bottleneck.

The other needs involve the Detroit, St. Clair and Sault Ste. Marie Rivers, which are still rated at 21-ft depth upbound and 25-ft downbound.

So far, $46 million of an authorized $146 million has been appropriated for deepening these channels to 27 ft. This leaves a $100-million U. S. expenditure yet to be made.

Further, Mr. Danielian has emphasized that there is not yet a single port on the Great Lakes with 27-ft depth of water. He figures it may take another $100 million and possibly 10 years to overcome this deficiency.

The survey below covering several of the Lake Cities indicates how little

Seaway Ports: Here Are the Needs,

Two Harbors, Minn.—Needs about $162,000 worth of dredging to get needed 28-ft depth.

Duluth-Superior, Minn.-Wis.—A $40-million terminal is being built and the first stage, a $10-million installation, is almost ready for operation. A Corps of Engineers survey recommends dredging to depths up to 28 ft at an estimated cost of more than $4.9 million. Presently claimed depth is 21 ft, but at least two ships have bottomed in 19 ft of water.

Ashland, Wis.—Two channels must be deepened, one to 21 ft for coal ships, the other to 27 ft for ore boats. Estimated cost of dredging: $1.5 million.

Marquette Harbor, Mich.—More than a quarter of a million dollars is needed to dredge present harbor area to 27 ft depth.

Milwaukee—Board of Harbor Commissioners is completing a $5-million pier.

Chicago—Work under way since 1955 to improve harbor facilities with funds received on $24-million bond issue. And additional $25 million is needed, but a revenue bond issue to raise it is being tied up by technical problems. The money would be used to increase elevator capacity, transit sheds, warehouses and wharfs. One private terminal company plans a $20-million expenditure for slip and dock facilities, but has not begun construction. City Commission has two principal projects: Calumet Harbor and Navy Pier. The latter facilities are currently undergoing $4-million improvement program, including two new 550-ft wharves for ocean-going ships.

Saginaw, Mich.—About $5.5 million is being spent to deepen the Saginaw River to 22 ft. Work is being delayed by two railroads owning river bridges; they say the bridges will be jeopardized by deepening the river. Discussions on badly needed turning basin are in preliminary stage.

Port Huron, Mich.—A $300,000 bond issue approved by voters in April will be used to provide dock facilities for one or two ships. Problem: St. Clair River, on which the port is located, has only 22-ft depth.

Detroit—Rated by some authorities as the best equipped of the U. S. Lake Cities, Detroit is still unable to serve Seaway traffic efficiently. With 36 miles of dockage and 131 piers on the Detroit and Rouge rivers, the city can accommodate only four ocean-going vessels at one time. Shippers report delays of four to six days awaiting berths. Two municipal projects in the talking stages involve expenditure of $12 million for 15 new berths. Port of Detroit Commission has asked for $250,000 in federal funds for planning.

Toledo—Lucas County Port Authority has applied for $14 million from federal government to deepen the channel. It has already spent $1.5 million for 65 acres of land, of which 28 acres are in use. Private industries plan to spend $7 million to $8 million for grain facilities.

Sandusky, Ohio—An expenditure of $5.8 million for dredging has been recommended by the Corps of Engineers.

they have done to prepare for the Seaway. "It's been wait and see" for most of them, says one of the Seaway corporation's advisory board members.

Now they are seeing. The unprepared ports are seeing ships pile up, or pass by, while the prepared ports are showing how to unload Volkswagons in Michigan.

Nobody will put a dollar figure on the total needs for docks, warehouses, and other shipping facilities in the Lake ports. Most such facilities will be constructed privately, some by port authorities and commissions. ENR's check shows only a small portion of what may ultimately be done.

And the ultimate?

Some say the St. Lawrence locks themselves will need to be twinned in the next 10 to 15 years as the Seaway approaches its 55-million-ton-per-year capacity. This could cost another $200 million, but it would put the yearly tonnage figure up to 100 million.

Then the Lake ports could build themselves up to be rated truly as ocean ports.

And only then would the project dedicated last week be truly finished.

Prospects

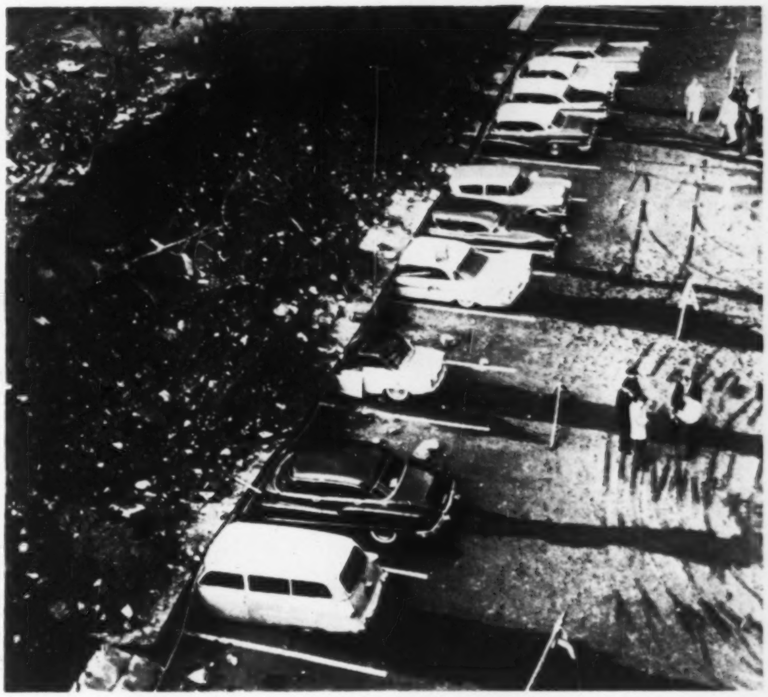
Lorain, Ohio—Needs $19 million of improvements, including breakwaters, deepening of river channels and replacement of an existing railroad bridge.

Cleveland—Needs $2.48 million for dredging harbor entrances, basins and river.

Ashtabula, Ohio—House Public Works Committee has approved $4 million to $5 million for deepening connecting channels into the Ashtabula River. The city will provide an additional million dollars for dredging river channel for ore boats.

Erie, Pa.—Last month dedicated a $2.25-million pier for ocean-going ships. Plans to spend $600,000 for equipment within 18 months. Port Commission is talking about an additionnal $7-million to $8-million expansion in 1961. Outer harbor and channel needs $1.7 million worth of dredging.

Buffalo—Needs more than $2.3 million worth of dredging tor deepening harbor entrances and docking areas.



Too Much Wall, Too Much Rain

Early one morning last week the concrete retaining wall pictured above collapsed in Yonkers, N. Y., dumping not only itself, but tons of earth and boulders on 10 parked cars.

Here's how and why it happened, as indicated by reports of investigators:

First of all, there were two walls.

Builders of a new apartment house, Philip Rosen, Inc., of Yonkers, put up a stepped, gravity-type concrete retaining wall. It was based on rock, at the rear of the property, where grade rises suddenly into the property behind. It was about six feet high.

Then, unknown to the Yonkers Building Department, another contractor, Cucci Brothers, Yonkers, built another retaining wall on the next property. It was parallel to, and only a few inches away from, the first wall. It was about a foot thick from top to bottom and apparently without a footing.

The bottom of the second wall was about two feet below the top of the first one. And it was 8 to 14 ft high. Backfill was dumped behind it nearly to the top.

Then the rains came. Leverage did the rest. And the walls went.

T-1 Steel Cuts Costs at Oahe

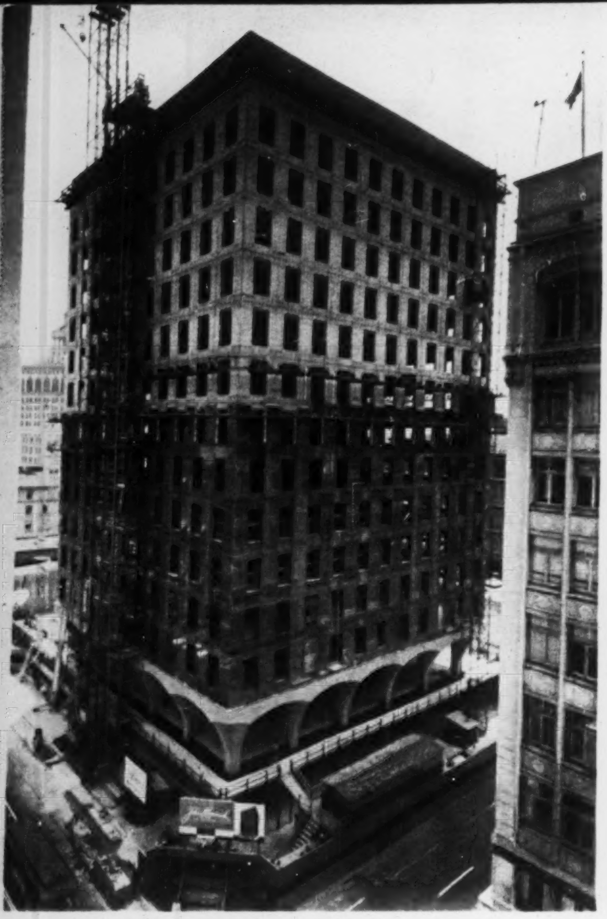
Welded T-1 steel scroll cases for the seven turbines at Oahe Dam, in South Dakota, will cost less to furnish and erect than merely to supply the prefabricated parts made of carbon steel.

The decision to substitute the high-strength alloy and welded construction, instead of the carbon steel and riveted construction originally planned, came during a renegotiation of contract between the Corps of Engineers and Allis-Chalmers Manufacturing Co., which will supply the turbines to be used on the Missouri River dam.

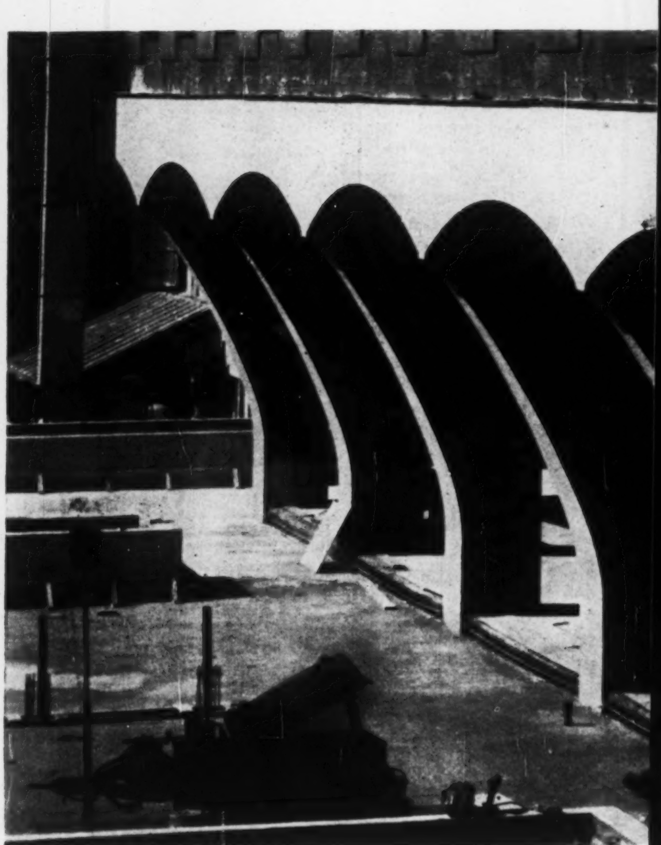
The lower costs result from the reduced thickness when the high-strength steel is used. It has a working stress more than twice that of carbon steel. Plate thickness is reduced from $2\frac{3}{16}$ in. to 1 in. The thinner plates are easier to handle during fabricating and the welded construction eliminates the need for placing rivet holes—a tough job on the curved scroll cases.

Chicago Bridge and Iron Co. will weld the cases. Special techniques, such as preheating the steel to 250-300 F before welding and heating the electrodes to 800F before use, are required in welding T-1.

Besides supplying the scroll cases, Allis-Chalmers will pressure-test them at 202.5 psi—50% higher pressure than the maximum expected in service. The original contract called only for oil penetration test of the individual rivets.



Wall bearing building rises from . . .



Concrete arches designed with a six-foot offset

Three-Story Arches Add Drama,

Twenty concrete arches, their eyebrows raised, rise from ground level to the third floor of a 14-story, reinforced concrete office building nearing completion in San Francisco. The arches add a dramatic effect to the structure. And they introduce some tricky design and construction problems too.

The building is the new western headquarters office of the John Hancock Mutual Life Insurance Co.

From the third floor up, it is traditional bearing-wall construction. It's square in plan with exterior walls 114½ ft long surrounding a 51-ft-square central core. Between core and exterior walls is 31½ ft column-free office space.

Between second and third floors, story height is 19 ft 9 in. The 20 arches, five to a side, rise 16 ft of this height from an arcade at the second floor. Below the arcade, arch columns drop to the open ground level.

• **Design problems**—The arch columns are spaced 20 ft 4 in. c-c and are offset more than 6 ft inside the bearing walls of the upper floors. This brought some complex structural problems.

Column centerlines for the arches are directly under vertical rows of upper floor windows. Because of this, bearing loads from upper floors introduce torsion in the spandrels directly above the arch columns.

The arch structure is heavily reinforced. Basic arch column reinforcing is a double layer of spiral rods surrounding two layers of vertical bars. In the arch itself, reinforcing includes diagonal bars and heavy longitudinal reinforcing as well as closely spaced stirrups.

In addition to other forces, the offset of the bearing walls from the arch columns throws a 300-kip lateral thrust in each arch—except at the corners of the building. These thrusts are balanced by similar thrusts on the opposite side of the building; the third floor reinforcing handles the equal and opposite forces.

The third floor also carries horizontal shears from the exterior bearing walls to the central core bearing walls, keeping these forces out of the arch structures. For this job, the third floor system is deepened from the normal 18-in.-thick slab-and-joist system used in the upper floors to a 7½-in. floor slab supported by relatively heavy concrete beams.

All concrete above the pile caps contains lightweight aggregate; the idea is to reduce size of members as much as possible. Concrete strength is 3,750 psi minimum at 28 days.

• **Construction problems**—Forming and casting the compound-curved arches wasn't easy. The contractor, Cahill Brothers, Inc., first made a mockup in his yard to be sure the shape was faithfully reproduced from the design. Then each arch form was individually fabricated. (Arches were formed by a double thickness of ¼-in. plywood with staggered joints supported on timber joists and falsework.)

The builder thought of using a partial set of arch forms, but the time spent moving them would have delayed construction too much. So forms were built for each arch.

Concreting the 24 arches and four corner flutes was divided into four

Problems

pours, each of which took an entire workday. For architectural reasons the arch concrete will be left bare. (Twelve separate mixes were tested to get the best looking concrete.)

After the forms were stripped, the arches were brush-hammered with carbide-tipped air-hammer chisel brushes. This process chips off a thin layer of concrete to expose the aggregate and gives the finish both texture and pattern. Sandblasting comes first, though, to remove the surface film of concrete. After the brush hammering, the surface is cleaned with muriatic acid.

Upper floors of the building are finished in dark gray polished granite with bronze window frames.

The building was designed by Skidmore, Owings and Merrill. SOM retained Prof. Boris Bresler of the University of California as a consultant on the torsional problems of the arches. And as a further check, the structural design of the arches was reviewed by Hansen, Holley and Biggs of Cambridge, Mass. Cahill Brothers, Inc., is a San Francisco contractor.

Wanted: Creative Architects

Architects who have let themselves become problem-solvers instead of designers came under fire from one of their better-known colleagues last week at the annual meeting of the American Institute of Architects in New Orleans.

Architect William L. Pereira of Los Angeles said some architects develop an exaggerated dependence on problem-solution designing in their student days. Later, in professional practice, they continue to design solutions rather than buildings.

Mr. Pereira spoke his mind in a panel discussion on "Individual Theories of Design" with architects Minoru Yamasaki, Charles E. Pratt and Philip C. Johnson.

Architects "quickly become accustomed to architectural problem-solving as a substitute for the lonely and agonizing process of creating," Mr. Pereira told his colleagues.

"Obviously the day of automated architecture is not far off, especially if we continue to talk and act like articulate, well-tailored IBM machines rather than men.

"When an architect starts to talk about design, you'll notice that he starts to squirm in his seat and finger his collar, acting generally like a father who's been asked by his child to explain the facts of life. In a word, he's embarrassed. Embarrassed by a subject on which, by all indications, he should be somewhat of an authority. And so he takes evasive action. He starts talking about problems.

"In fear or indolence, we have chosen to become problem-solvers rather than accept the greater and infinitely more difficult challenge of creative design in which these problems would be naturally resolved as a matter of course. We have to return to the concept of 'image design' rather than 'problem-design'."

Mr. Yamasaki commented that architecture in the foreseeable future will be merely a refinement of the type already in vogue.

"Buildings have to be stable. Architecture doesn't face the obsolescence of rockets or of automobiles. An awful lot of terrible things have been built because of the rush of construction."

The institute's highest honor, The Gold Medal, was awarded to architect Walter Gropius.

The award came 46 years after Professor Gropius received his first Gold Medal, at the World Exposition in Ghent, Belgium.

Between the two awards, Professor Gropius has received innumerable honors—for founding the influential Bauhaus School of Architecture in Germany, for his work at Harvard University as chairman of the Department of Architecture and School of Design and for his extensive design works here and abroad.

Walter Gropius: Wins Gold Medal.

Professor Gropius is now senior partner of Architects Collaborative, Cambridge, Mass.

In the AIA's elections, John Noble Richards, Toledo, was re-elected as president. Philip Will of Chicago and Henry Wright of Los Angeles were re-elected first and second vice-presidents. New officers elected are J. Roy Carroll, Jr., of Philadelphia, secretary, and Raymond S. Kastendieck of Gary, Ind., treasurer.

Highway Funds to Aid RR Signal Maintenance

The North Carolina legislature has found a new way to tap highway funds. It has passed a law requiring the State Highway Commission to pay half the costs of maintaining railway grade crossing safety signals.

The commission has protested that the law will immediately divert more than a quarter of a million dollars a year from highway construction and that the figure will get larger.

The measure applies to the more than 500 signals now in the state (previously maintained entirely by the railroads) and to any that will be erected in the future.

Earlier, the legislature killed a proposed constitutional amendment to prohibit diversion of highway taxes.

Higher Yield Point for A7 Steel?

- **ASTM study could lead to higher unit stresses and lower-cost steel construction.**
- **Society changes some material specs, considers others at work-filled annual meeting.**

The question of raising the yield-point requirements for ordinary structural steel was reopened last week at the 62nd annual meeting of the American Society for Testing Materials. For the construction industry, it was the most important development to come out of the more than 1,000 committee meetings and 36 technical sessions.

If ASTM should revise its widely used standard specification (A7) and require minimum yield strength, many code-writing authorities are certain to permit higher unit stresses for structural steel.

This would improve the competitive position of steel in relation to other structural materials and lead to a re-evaluation of present design criteria.

The subject came up in the subcommittee on structural steel of the Committee on Steel (A-1). Subcommittee chairman J. R. Le Cron, Bethlehem Steel Co., instructed a task group to report back on this at the next meeting. Meanwhile, an investigation to determine whether there is sufficient consumer demand for an increase in yield point will be started.

The question has been raised several times in the past, but pressure for a higher yield point has never been strong enough to bring about a revision of specification A7.

But now, several committee members confided, economic pressure on structural steel from competitive materials is increasing the likelihood of a change—probably by establishing different yield points for different thicknesses of metals.

Raising the yield point of A7 steel is not a simple matter. Consumers are demanding that it be done with little or no price increase. And they would like the higher yield strength without sacrificing present desirable characteristics, other than tensile strength.

But steels with higher yield points are more costly to produce and fabricate. Furthermore, the yield strength of steel generally is closely related to its chemistry; the higher values require more carbon or manganese, either of which may adversely affect ductility, weldability and toughness. However, since manganese has a much smaller effect on these properties than carbon, producers, by adding more manganese, can turn out satisfactory structural steel with a yield point at least 3,000 psi above the currently required level. But manganese is more expensive than carbon.

Complicating the situation even more is the fact that the greater the thickness of the steel, the more carbon or manganese is needed to meet a yield-point requirement. It may therefore be necessary to permit lower yield strengths for thick material if A7 is revised.

The subcommittee is also studying requirements for a weldable-type, high-strength, low-alloy steel.

On the recommendation of the subcommittee on steel reinforcement bars, committee A-1 recommended ASTM adoption of tentative specifications for deformed billet steel bars for concrete reinforcement with 60,000-psi minimum yield point (A432). The subcommittee also advanced revisions for rail-steel reinforcement (A16), wire for prestressed concrete (A421), cable for prestressed concrete (A416) and high-strength billet-steel bars (A431).

• New developments—The week-long meeting in Atlantic City, N. J., drew more than 3,000 engineers and scientists. Here are some of the other important results of their meetings:

Committee on Cement (C-1) recommended some revisions of standard specifications for portland cement (C150-56) and for air-entraining portland cement (C175-56). One change limits the percentage of alkalies permitted when the cement is to be used in concrete with aggregates that may be deleteriously reactive. A second allows the optimum amount of SO_3 (gypsum and other sulfates) in the manufacture of Type III and IIIA cement.

Committee on Concrete and Concrete Aggregates (C-9) proposed two new tentative specifications: cotton mats for curing concrete; and method of testing to determine the effectiveness of mineral admixtures in preventing excessive expansion of concrete due to alkali-aggregate reaction.

Committee on Clay Pipe (C-4) was permitted to expand its scope to include factory-made compression joints used for the conveyance of sewage, industrial waste and storm waters. It recommended a new tentative specification for vitrified clay pipe joints using materials having resilient properties (C425).

Committee on Lime (C-7), having established a tentative covering pozzolans for use with lime, considered a proposed test method for fly-ash used in compacted mortars, such as those for highway base courses that will be covered with bituminous surfaces. The method would be incorporated in the present C379-56T.

Committee on Gypsum (C-11) recommended a tentative specification for gypsum backing board. This material consists of an incombustible core of gypsum, with not more than 15% fiber, surfaced with paper. It also has a back surface covered with aluminum foil.

Committee on Mortars for Unit Masonry (C-12) is proposing a replacement specification for mortar for reinforced brick masonry (C161-44T).

Committee on Manufactured Masonry Units (C-15) recommended a new tentative covering clay drain tile. It will replace C4-55.

Committee on Road and Paving Materials (D-4) set up a new tentative for hot-mixed, hot-laid asphalt paving mixtures. It will replace two existing specs—D947-55 and D978-54—which cover asphaltic concrete for base and surface courses and sheet asphalt pavement.

Committee on Bituminous Materials for Building Uses (D-8) proposed a tentative for woven glass fabrics saturated with bituminous substances for use in waterproofing.

Acting on recommendation of its new long-range planning committee, ASTM established an administrative committee on education in materials, a committee on fellowships and grants-in-aid and a Division on Materials Sciences. The objective of the new division is to focus attention and coordinate studies on the fundamentals of materials, as distinct from engineering.

The society elected F. L. La Que as its new president. He is vice-president and manager, Development and Research Division, The International Nickel Co., Inc., New York City. Vice-president is M. N. Clair, president of the Thompson and Lichtner Co., Inc., Brookline, Mass.

Elected as honorary members were Douglas E. Parsons, chief, Building Technology Division, National Bureau of Standards, and Jerome Strauss, consultant, Vanadium Corp. of America.

Interstate: Will Contracts Stop?

Here's what will happen if government doesn't act . . .

(Millions)

	Fiscal 1961		Fiscal 1962		Contract awards will have to stop by . . .
	Authorized	Available	Authorized	Available	
Total	$2,500	$0	$2,200	$500	
Ala.	$48.8	$0	$43.0	$9.8	Jun '60
Ariz.	33.8	0	29.8	6.8	Dec '60
Ark.	24.6	0	21.6	4.9	Aug '60
Calif.	251.5	0	221.3	50.3	May '59
Colo.	19.2	0	16.9	3.8	Sep '60
Conn.	30.2	0	26.6	6.0	Jul '59
Del.	8.7	0	7.7	1.7	Jun '61
Fla.	64.1	0	56.4	12.8	Sep '59
Ga.	59.7	0	52.6	11.9	Jul '60
Idaho	17.1	0	15.0	3.4	Nov '60
Ill.	126.9	0	111.7	25.4	Sep '59
Ind.	71.4	0	62.8	14.3	Jul '60
Iowa	23.5	0	20.7	4.7	Jan '60
Kan.	22.2	0	19.5	4.4	Jun '60
Ky.	43.5	0	38.3	8.7	Jan '60
La.	65.4	0	57.5	13.1	Dec '59
Me.	12.7	0	11.2	2.5	Jan '60
Md.	55.8	0	49.1	11.2	Feb '60
Mass.	68.9	0	60.7	13.8	Dec '59
Mich.	97.3	0	85.6	19.5	Sep '59
Minn.	46.7	0	41.1	9.3	Nov '60
Miss.	27.2	0	23.9	5.4	Mar '60
Mo.	70.6	0	62.1	14.1	Oct '59
Mont.	28.1	0	24.8	5.6	Jul '60
Neb.	15.3	0	13.4	3.1	Feb '61
Nev.	12.9	0	11.4	2.6	Jul '60
N. H.	13.6	0	12.0	2.7	Sep '59
N. J.	80.1	0	70.5	16.0	Jul '60
N. M.	29.7	0	26.1	5.9	Dec '59
N. Y.	122.6	0	107.9	24.5	Sep '59
N. C.	13.4	0	11.8	2.7	Nov '60
N. D.	11.0	0	9.6	2.2	Jan '60
Ohio	161.2	0	141.9	32.3	Jun '59
Okla.	22.5	0	19.8	4.5	Aug '60
Ore.	42.9	0	37.7	8.6	Sep '59
Pa.	100.9	0	88.8	20.2	Apr '60
R. I.	11.5	0	10.1	2.3	Jan '60
S. C.	20.4	0	17.9	4.1	Oct '59
S. D.	10.5	0	9.2	2.1	May '60
Tenn.	73.4	0	64.6	14.7	Dec '59
Texas	111.8	0	98.4	22.4	Nov '60
Utah	23.1	0	20.4	4.6	Oct '59
Vt.	23.3	0	20.5	4.7	Aug '59
Va.	104.9	0	92.3	21.0	Jul '61
Wash.	44.8	0	39.4	9.0	Dec '59
W. Va.	31.0	0	27.3	6.2	Dec '59
Wis.	26.1	0	22.9	5.2	May '60
Wyo.	25.7	0	22.6	5.1	Oct '59
D. C.	24.5	0	21.6	4.9	Oct '59

The Senate blocked two passes at Interstate financing legislation last week. Both were in the form of amendments tacked to a corporate-excise tax extension bill.

One was for the President's proposed gas tax increase of 1½ cents per gallon, which would add $840 million annually to the Highway Trust Fund. It was defeated 46 to 33.

The other was for a shift of $964 million of highway-user taxes from the General Fund into the Trust Fund. It was defeated 47 to 32 as too much of a "back-door" maneuver.

The votes were part of the continuing disagreement between the Administration and Congress on the solution to the looming Highway Trust Fund deficit.

With telegrams in-hand from the states presenting their plight if 1961 apportionments don't come through soon, President Eisenhower earlier in the week had plumped again for the gas tax increase to solve the financing problem.

But Congress is apparently still betting the President will finally back off from his implied veto threat if ultimately faced with a choice between deficit-financing road bills or a major construction slowdown.

And a slowdown there would be, judging by what's been said before—and by telegraph responses to a recent query of the states by the Bureau of Public Roads.

If 1961 apportionments don't come through:

Ten states say they would have to stop awarding Interstate contracts within the next three months; 16 by the end of the year; 11 by July, 1960; and 12 states after July, 1960 (see table).

Here are comments from some of the states most immediately affected:

"Holding several large Interstate projects totaling in excess of $50 million pending decision 1961 apportionment"—California.

"Difficulty will be encountered resuming construction after a year lapse in funds, due to resulting loss of experienced construction personnel"—Michigan.

"Already indulged in advanced financing of Interstate projects to extent of about $40 million"—Ohio.

"Any stoppage of program will require several years to rebuild our highway department organization"—Vermont.

"Revision of the program will place (highway) department in a very unfavorable position on future programs proposed at the public hearings"—Connecticut.

Big Orders Spell Happy Birthday

Even if this week did not mark its tenth anniversary, the Construction Industry Manufacturers Association would have ample reason for celebration:

- New orders for construction and mining equipment are now the highest on record, pointing to a new peak year.
- May was the eighth consecutive month in which order volume topped the year-ago figures.

It is against this background of current prosperity that CIMA now reviews the past decade. Before July 1, 1949, construction equipment manufacturers were organized as the Manufacturers Division of the American Road Builders Association. CIMA was born out of a growing feeling among manufacturers that they should promote all phases of construction activity, rather than just highways.

Today, 38% of its members' products go into roadbuilding, while 68% of all construction equipment is used for building other than highways—industrial and commercial buildings, military construction, mining and quarrying, petroleum and pipelines, logging, waterways and dams, coal stripping, homebuilding and agriculture. CIMA's 240 members produce 95% of the dollar volume of construction machinery sold in the U.S.

The organization continues to function as ARBA's Manufacturers Division and as the Construction Industry Division of the International Road Federation.

Now, however, CIMA—as the recognized spokesman for equipment manufacturers—also maintains liaison with Congress, with branches of the Administration and, through its joint committees, with the Associated General Contractors, the Associated Equipment Distributors and the Highway Research Board.

Much of the organization's work is therefore educational and promotional in nature. "CIMA is very much like a fire horse," explains Vice-President Robert P. McKendrick, "it normally doesn't come out of the barn until an emergency exists."

But let it smell smoke, and the response is quick. It is already champing at the bit at three trouble spots that, says President G. A. Gilbertson, "could well detract from the anticipated production figure of $2.2 billion." CIMA is worried about the effect on construction—and therefore on equipment sales—of the federal delay in providing adequate financing for the Interstate Highway System (see p. 27); of a possible steel shortage growing out of a prolonged strike (see p. 74); and of the "indiscriminate" dumping by government agencies of surplus construction equipment.

CIMA's Gilbertson

The organization is vocal on public problems touching its members' interests. CIMA representatives are frequent witnesses before Congressional committees; their expert advice is invited by other government agencies concerned with construction.

But CIMA's main message is directed within—to its own members and to others in and allied with the construction industry. The message: "Help yourself."

CIMA sponsors, within its organizational framework, bureaus and councils in which member companies can stake out new programs designed to be beneficial to the industry. Two such groups were organized during the past year—the Continuous Trenching Equipment Bureau and the Bituminous Distributor Manufacturers Bureau.

One of its most dramatic achievements was the last "Road Show," which CIMA organized, managed and financed in 1957 (ENR Feb. 7, 1957, p. 21, p. 57). The indoor exposition drew 67,000 registrations. Visitors from 87 countries saw an estimated $12 million worth of equipment displayed by 277 exhibitors. Even now Mr. McKendrick and his four-man staff are working on plans for the next show, scheduled for 1963.

Between now and then, however, CIMA has a full calendar of other "things to do." The organization is now emphasizing the adoption of result specifications to permit the contractor more latitude in executing his contracts. For the immediate future, says Mr. Gilbertson, "We are anticipating the expansion of group meetings by the manufacturers wherein they can discuss their mutual problems, report business statistics, promote the use of their products, or services, and embark on service-type programs."

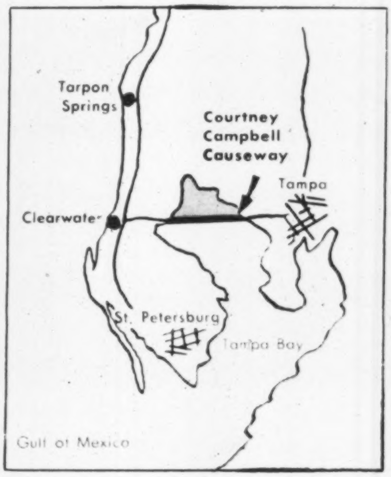
Causeway May Become a Dike

A nine-mile causeway across an arm of Tampa Bay, Fla., may be turned into a dike to create a fresh water lake. A portion of Old Tampa Bay north of Courtney Cambell Causeway would be blocked off from the sea and a 22-sq-mi lake containing 65,000 acre-ft of fresh water would be formed.

Cost of the project, to be located between Tampa and Clearwater, is estimated at $7 million. First phase of construction would include spillways and locks to separate the salt water from the fresh. The causeway now has several openings that allow tidal flow from the Gulf of Mexico.

A one-mile-long strip of the causeway would be widened to 1,100 ft to accommodate motels, marinas and other commercial enterprises. Revenue from the leases on this property is expected to finance the project.

A 10-ft-high levee, built up from the bay bottom to some 2 ft above the present roadbed, would extend the length of the causeway. The lake level would be kept 2.5 ft above sea level to prevent salt water intrusion. Water in the area behind the dike would become fresh in five years.



The study recommending the project was made by Reynolds, Smith and Hills, consulting engineers, Jacksonville.

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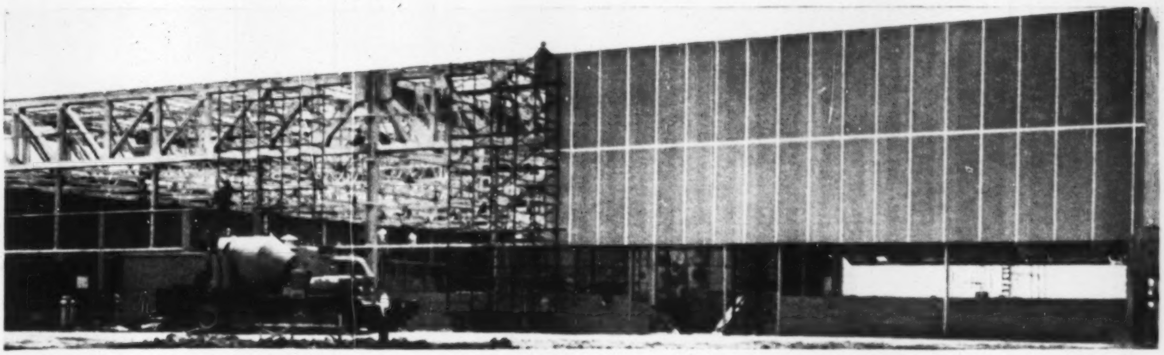

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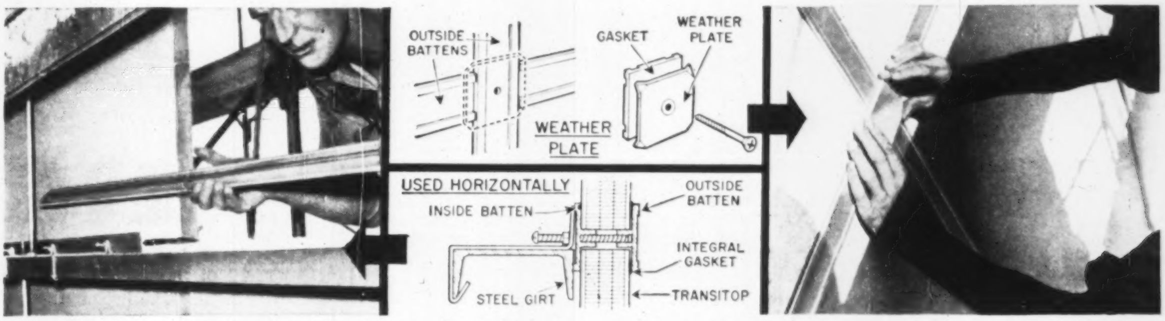
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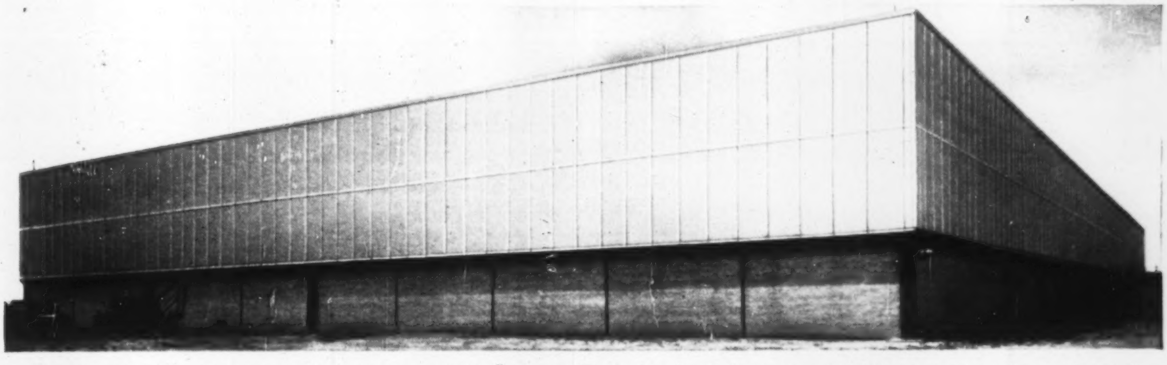

Transitop panels are an attractive stone gray in appearance. Pre-primed panels also available for any type of paint finish if color is desired. Using H & B Aluminum Battens, panels can be demounted and reused when constructing building additions.

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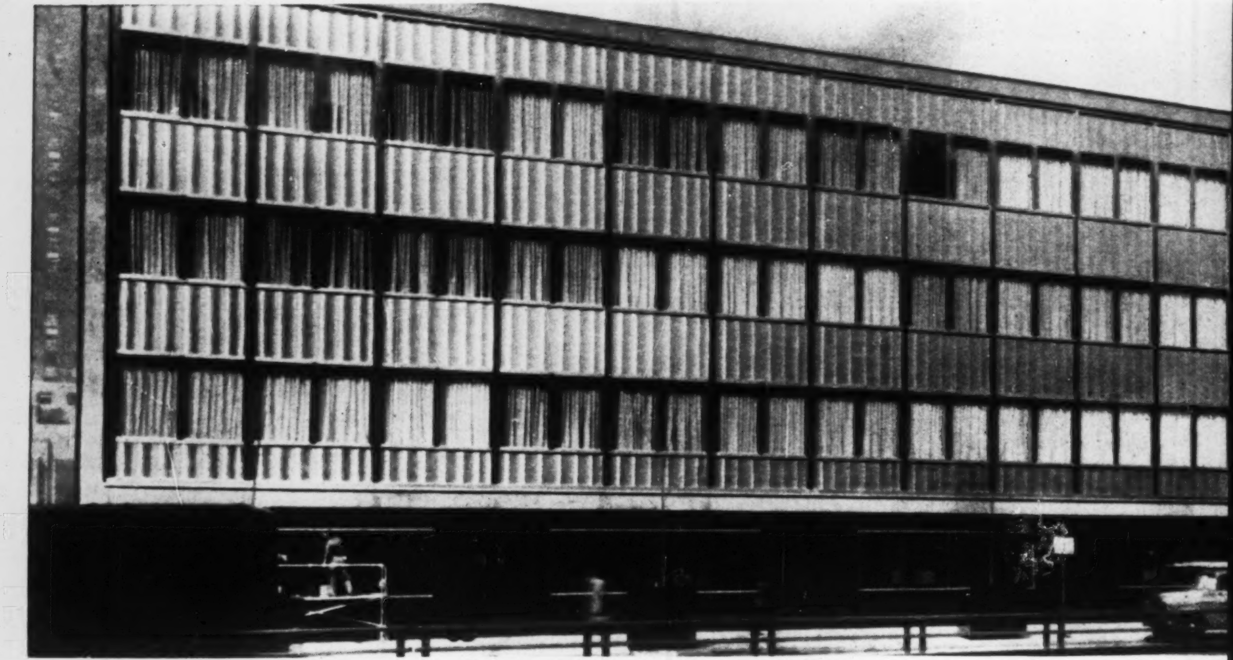

LONG, LOW, AND

Republic Stainless Steel gives Chicago's new Morton Salt Building longest

STAINLESS STEEL REVERSIBLE WINDOWS, here being installed, and Stainless Steel Curtain Wall, used throughout the new Morton Salt Company Office Building, were fabricated by Republic's Truscon Division. Architects: Graham, Anderson, Probst & White, Inc., of Chicago, Illinois. Contractor: Sherman Olson, Inc., also of Chicago.

10¾" DIAMETER REPUBLIC STEEL PIPE was used in erecting the new Tremco Building in Cleveland, Ohio. Slabs were poured on the ground, then hoisted up pipe by means of hydraulic screw jacks. Time and money were saved by the elimination of scaffolding and elevators. Slabs were raised at the rate of three feet per hour. Mail coupon for details on Republic Steel Pipe.

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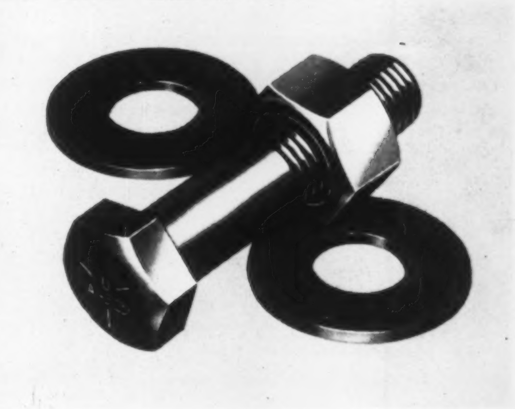

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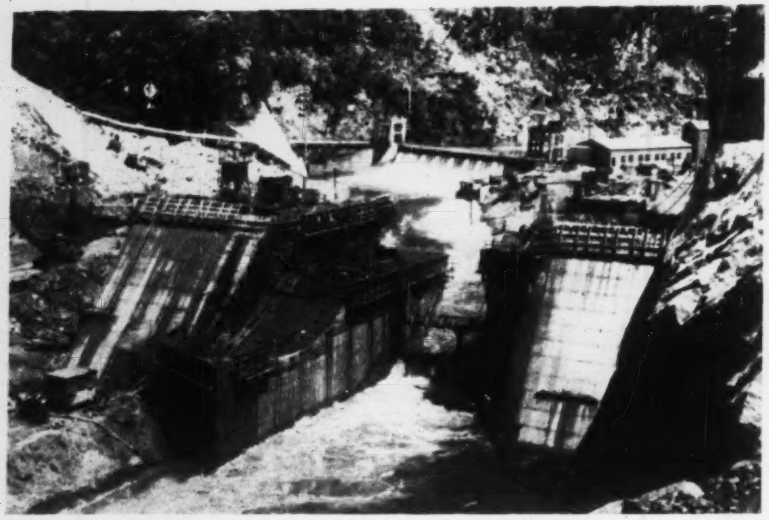

River Snakes Through Dam

The Skagit River near Seattle was diverted last month into an S-curved new channel to permit excavation for second-stage construction of Seattle City Light's Gorge High Dam.

River water passing over an existing low diversion dam just upstream from the new site is turned nearly at right angles into the new channel. It flows through a low section left in the first stage of the high dam.

Design of the new channel was developed last year in the hydraulic laboratory of the University of Washington (ENR Nov. 20, 1958, p. 26). A large concrete baffle wall **(arrow), 14 ft** high and 100 ft long, was installed about 100 ft downstream from the diversion dam to dissipate the force of the water during periods of high flow. Immediately after diversion, the flow reached a volume of 4,000 cfs. The channel and baffle wall have been designed for flows up to 25,000 cfs. Nearly all the diversion channel was paved or consolidated with concrete to prevent erosion.

City Light operated its power stations on the Skagit River in a manner to maintain a dry channel at the dam site. This enabled Merritt-Chapman & Scott Corp., the contractor, to proceed with the excavation, preparation of the diversion channel and construction of the cofferdam.

The project is scheduled for completion in 1961.

Around the World . . .

- **Low bidder again**—A foreign manufacturer again is low bidder for turbines to be used at Big Bend Dam in South Dakota. English Electric Export and Trading Co. bid $6.5 million for eight 90,000-hp turbines. It was about 30% below the lowest bid from a U. S. manufacturer.

- **Harmony on the Indus?**—The longstanding feud between India and Pakistan over the waters of the Indus River and five tributaries may be settled this fall. Most likely settlement will allocate three western rivers to Pakistan, three eastern ones to India. A system of inter-river canals in Pakistan would be partly financed by $200 million in long-term loans from the U. S., Britain, Canada and Australia.

- **For whom the bell**—The new Public Safety Building in Norfolk, Va., will have a 109-year-old bell built into it. Known as the old jail bell, it was originally cast in 1850 and recast in 1867. It has hung, unrung, for years on top of Norfolk Police Headquarters. Why put it in the new building? Police chief says, "It gives me a sense of continuity."

- **Boost for TVA**—Senate Public Works Committee has approved a bill to permit the Tennessee Valley Authority to finance new construction. It is similar to a House-passed measure with one big exception: TVA would be exempt from the Buy American Act, which gives domestic suppliers a 6% to 12% advantage over foreign bidders on U. S. work.

California Plans Another Carquinez Strait Bridge

Bids have been asked for erection of a 6,215-ft, deck-truss highway bridge over the Carquinez Strait between Benicia and Martinez in California.

The substructure is estimated to cost $10 million. The estimate for the superstructure is $14 million. Bids will be opened in Sacramento July 22, 23.

The project will be financed by $34 million in revenue bonds that will be offered by the California Toll Bridge Authority. Tolls from the parallel Carquinez bridges between Crockett and Vallejo will also be pledged to pay off the Benicia-Martinez Bridge.

The bridge deck will be 187 ft above the water at its highest point and 62 ft wide.

Failure to Vote Gas Tax Dims Tallamy's optimism

Bertram D. Tallamy, Federal Highway Administrator, is "not optimistic" about continuance of the Interstate Highway Program.

He voiced his fears last week at the 36th annual conference of the Western Association of State Highway Officials in Billings, Mont.

The greatest danger now is Congressional reluctance to vote the gasoline tax increase. If Congress substitutes a deficit-financing plan, the President may veto, Mr. Tallamy said.

The generally overshadowed state-groping for funds was brought to the fore by W. C. Williams, retiring WASHO president. He deplored the "one bugaboo that no state highway department can overcome—the lack of finances that may be required to match federal funds."

Fred C. Quinnel, Jr., Montana Highway Department engineer, was elected president of the association.

Russia to Increase Size Of Bratsk Hydro Station

Even before it is completed, the Russians are announcing plans to expand the world's largest hydro power station (ENR Feb. 27, p. 24). Capacity of the powerhouse at Bratsk, on the Angara River, Siberia, will be increased eventually from 3.6 million kw to 4.5 million kw.

The 900,000-kw addition will be achieved by increasing the number of generators from 18 to 20 and increasing the size of each from 200,000 to 225,000 kw.

It will be a long time before full capacity is achieved. Fourteen of the generators are scheduled to be installed by the end of 1965. The remaining units will be placed when power demands in Siberia increase.

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To avoid explosion-causing particles of dust or lint, pipes are checked with black light . . .

For Missile Bases: Antiseptic

Many a work-hungry contractor is being enticed these days by the millions of dollars coming on the market in the new field of intercontinental ballistic missile base construction.

The ICBM base building program is big and promises to get bigger. Ten bases have been announced so far. More are expected. The cost of work is substantial—about $30 million for an Atlas ICBM base and $45 million for a Titan ICBM installation.

Probably the bases being built now for the liquid-fueled Atlas and Titan missiles will be made obsolete by the solid-fueled Minuteman. Then the work will begin all over again.

There's another side of the coin, however. Those tempted by the prospect of all this work should be alerted to bring their pipe wrenches and wash their hands.

That's the lesson contractors are learning at Francis E. Warren Air Force Base, Cheyenne, Wyo., where the grim and angular structures of the nation's first operational Atlas base are emerging (ENR Mar. 19, p. 45).

The Warren AFB job demonstrates that missile base building is as much a job of plumbing as it is other types of construction. From 40% to 50% of the cost of each Atlas launcher goes for the valves, tanks and piping that make up the propellant loading system. It has also become evident that missile base plumbing is to ordinary pipefitting as the ICBM, itself, is to the hand grenade.

This is because of the nature of the fuels used in the missiles: liquid oxygen, helium, nitrogen and kerosene. Most can be dangerous, but the worst is liquid oxygen. It is tricky to handle and devastatingly explosive.

A demonstration given to workers drives home this point. Successively, a fragment of tobacco, a bit of lint and a bead of sweat are dropped into phials of liquid oxygen. In each case an explosion results.

Any foreign organic matter in the piping—lint from a wiping cloth, a thumb print, a pinpoint smear of cutting oil—poses the danger of an explosion as the missile is being fueled, thereby blowing up weapon, tanks and launcher. Even if the particle is not of a nature to trigger an explosion, such as a weld spatter or a grain of sand, it might clog a needle valve or other delicate part and cause the missile to fail.

Specifications require piping that is clean to a degree approaching the absolute. They even exceed surgical standards. Particles larger than 150 microns (.0059055 in.) are barred. A hole of 150 micron diameter is too small to pass a light ray detectable by the naked eye.

The job locale complicates this cleanliness objective. Wind whoops across the Wyoming plains at speeds as high as 75 mph. When contractors attempted to inclose the construction for winter work, tarps were torn loose in a matter of hours. Polyethylene film was whipped to shreds. Cane fiber board was wrenched loose and sent sailing in sheets across the plains. It was necessary to resort to semi-permanent construction, using ¾ in. plywood, to combat the wind.

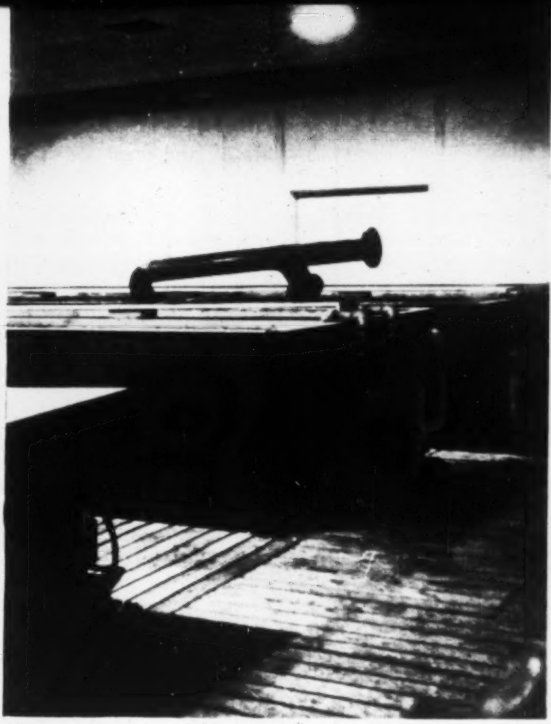
Missile construction, of course, stirs up as much dirt as any other construction job. The loose granular material at Warren AFB, whipped up by high winds, was so devastating that workers had to have facial protection to keep their skin from being cut.

Most of the ICBM sites are in similar locations.

George A. Fuller Co., Los Angeles, holds an $11.8-million general contract for construction of six launchers, two blockhouses from which missiles are fired and water and sewage systems at Site A of Warren AFB.

Subcontractors for the job are B. K. Stoneman Sons, Inglewood, Calif., which will fabricate the piping; Planetech Laboratory, Inc., also of Inglewood, which has the cleaning, and Weldex Corp., Los Angeles, which checks out the welding.

The builders are using skids in fabricating the piping. These are platforms that range in size from 8 x 12 ft to 10 x 20 ft. On them are concen-



And washed thoroughly in vats of acid . . .

GLASS
CATHODE RAY TUB

Then parts are wrapped in polyethylene.

Contractors

trated the intricate network of pipes, valves and instrumentation that makes up the nerve center of the propellant loading system.

Ten skids are ranged in the open about each of the launcher structures. The skids are connected with the fuel tanks and vessels at one end, and at the other to the piping that connects through flexible tubing with the missile itself.

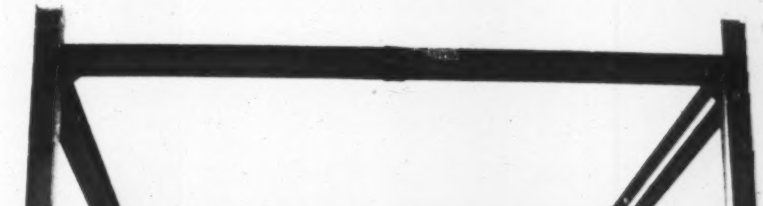
The skid technique permits off-site fabrication under conditions of controlled cleanliness. If anything goes wrong at the launcher site, an entire skid can be lifted out and a new one substituted.

Stoneman chose an idle cold storage building for its fabrication plant. The windowless, insulated structure simplifies the problem of dust and temperature control.

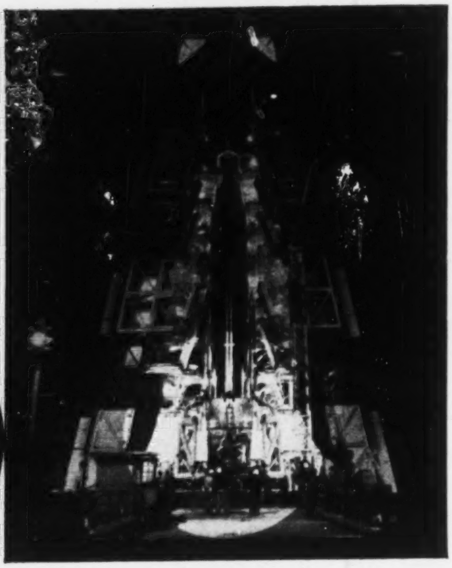
Workers cannot smoke on the job or eat lunch in the room where assembly takes place. They wear plastic gloves to prevent fingerprints. When individual pieces of pipe are not being worked, ends are closed off with temporary seals to prevent entry of foreign particles.

Cleanliness reaches its peak in Planetech's operation, which takes place in the same building. There the individual subassemblies are cleaned before they are put together.

(*Turn the page*)



STEEL FRAMING is for the launcher building, which houses the missile. Frame will support rollback, concrete slab roof.



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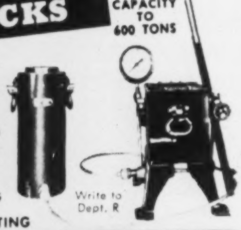

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. . . Antiseptic contractors

The center of the operation is five large tanks that hold the cleaning solutions. These cleansers are nitric acid, hydrofluoric acid, trichloroethylene, a solution to neutralize the cleaning fluids and demineralized water for intermediate and final flushings.

Workers in the cleaning section wear lintless clothing of hard linen or nylon, rubber shoes and linen headcloths. A speck of dandruff conceivably could blow up a missile. Wiping cloths are also of linen.

Piping is first flushed in hot water and then immersed in an acid solution to etch away scale and rust. The pipe is then put in the neutralizing solution and flushed with hot water. The parts are de-greased with trichloroethylene.

Sterilized hot air and nitrogen gas dry the components until gages record zero humidity. They are next checked for any hydrocarbon smear or vapor by electronic probes, black light and wipe tests. All components are coated with a preservative free of hydrocarbon. To prevent recontamination, valves and bolts are packed in polyethylene bags, and pipes are closed off with polyethylene gaskets and metal seals.

Disposal of the chemical cleansers cannot be casual. If the acids are not neutralized, they will eat away Cheyenne's sewers. The trichloroethylene has to be diluted to the point of ineffectiveness or it will impair the sewage treatment system.

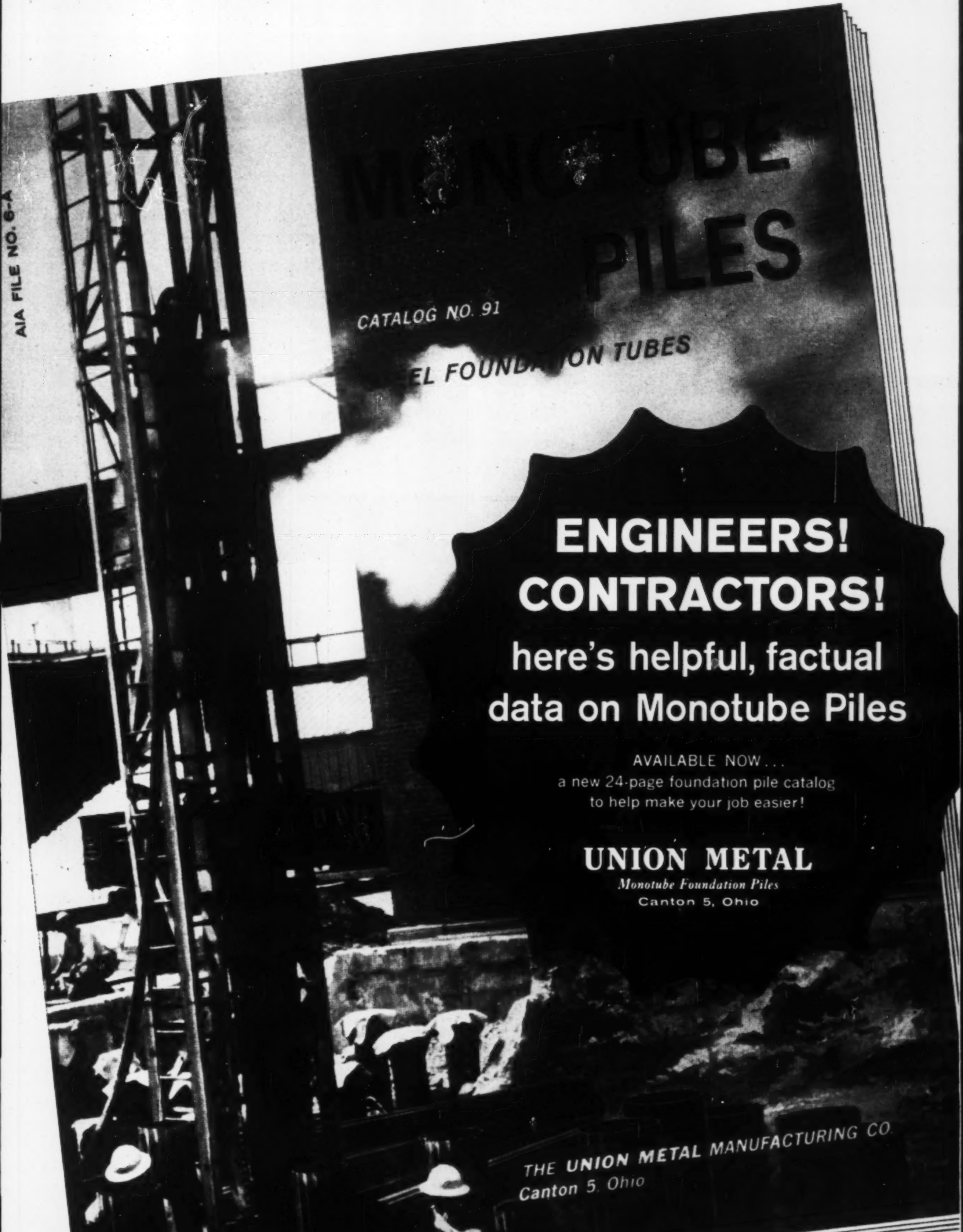
Advanced Research Center For University of Kansas

Construction is scheduled to start this summer on a $200,000 building to house a Center for Research in Engineering Science at the University of Kansas at Lawrence. It is envisioned as a midwestern counterpart to the Institute for Advanced Studies at Princeton.

Dean John S. McNown of the university's School of Engineering will be the director of the center. Staff members will devote about two-thirds of their time to research and one-third to teaching.

The center will contain only a few laboratories, since its principal purpose is to provide a place for scientists to study, think and discuss problems among themselves. The university's other research facilities, including an atomic reactor soon to be installed, will be available for use by the center's staff.

The center is being financed by gifts and grants. It's expected to be self-supporting with funds received for industrial and government research. Building plans are being drawn by the Kansas City architectural firm of Neville, Sharp and Simon.



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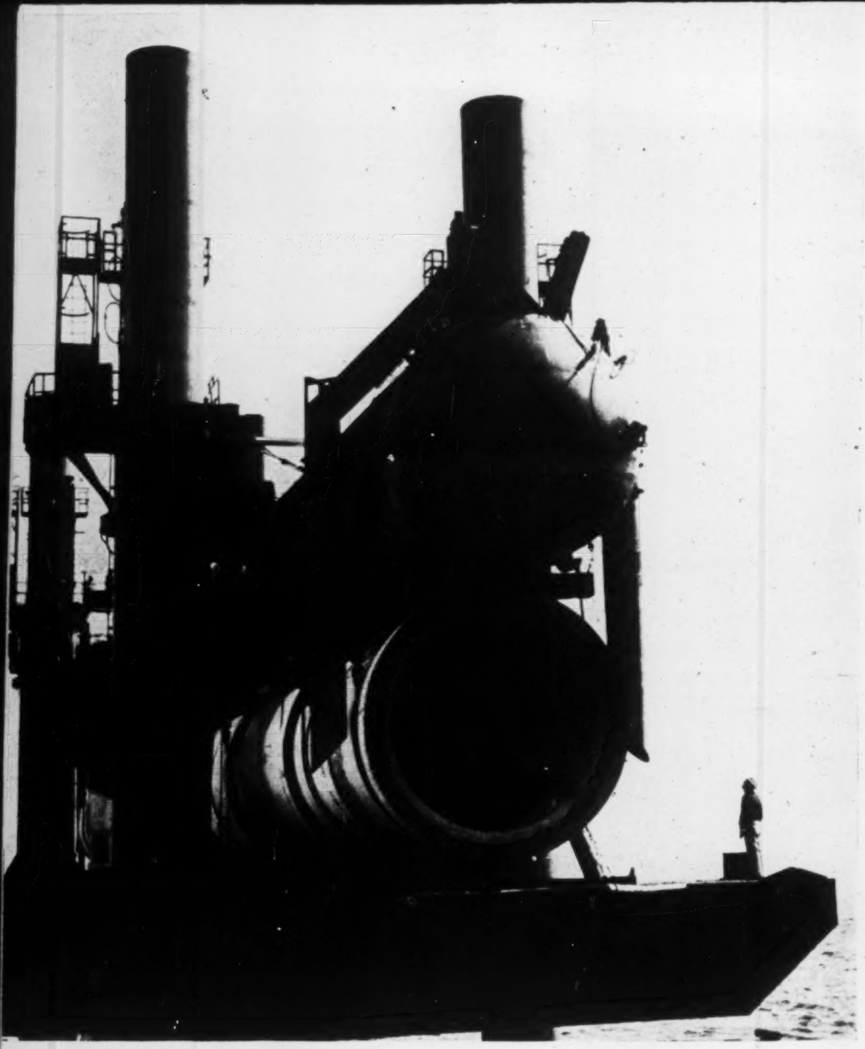
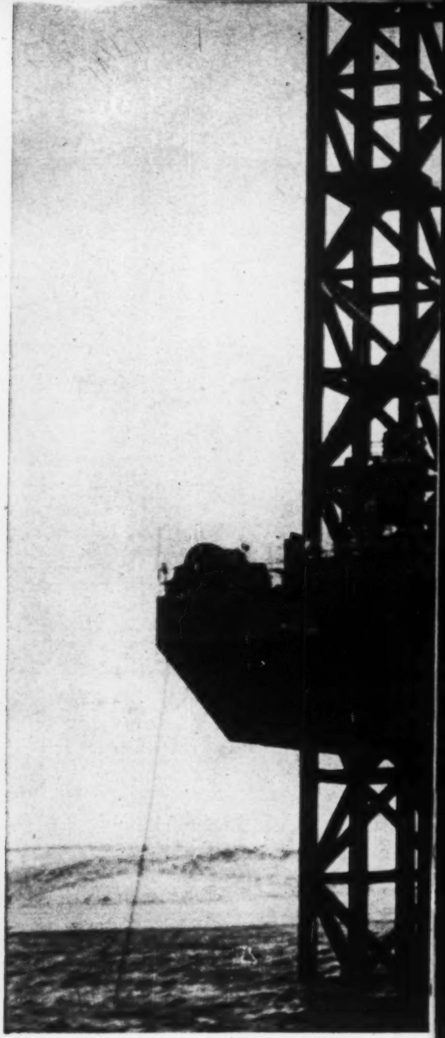


PIPE AND PONTOON at launching yard. Deck submerges to let assembly float free.



WORK PLATFORM jacks itself out of water

Biggest Ocean Pipelaying Job

The greatest ocean pipelaying job in construction history is moving ahead rapidly off the California coast. A 12-ft-dia. 5½-mile ocean outfall for effluent from Los Angeles' Hyperion sewage treatment plant is being placed on the ocean bottom. Key to the work is a huge "Texas-tower" type work platform capable of placing pipe in 200 ft of water.

The pipeline is a major element in a $60-million Los Angeles sewage works construction program (see box). Building the underwater pipeline under a $21-million contract is Hyperion Constructors, a joint venture of six construction firms—Raymond International Inc. (the sponsor), DeLong Corp., Healy-Tibbitts Construction Co., Peter Kiewit Sons' Co., Macco Corp., and Tavares Construction Co. The floating work platform is named the "George F. Ferris" for Raymond's president.

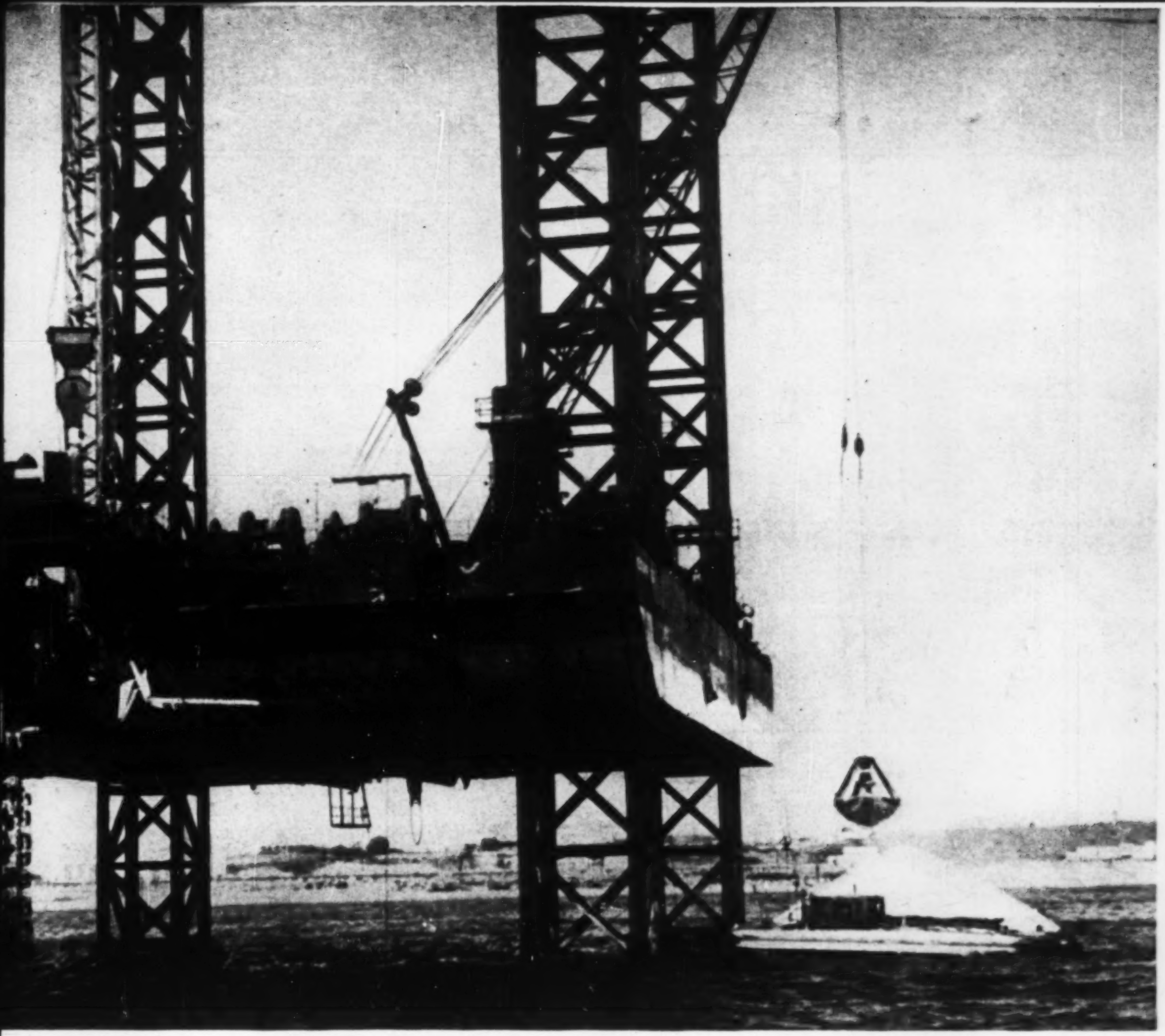
The pipelaying operation begins by floating the 4,500-ton work platform into position and jacking it up on its legs to a working position safely above water level. A string of pipe slung below a huge pontoon is then snaked under the platform, lowered to the bottom and joined to pipe already placed. Three to five 192-ft strings are being laid each week.

The pipeline extends 27,500 ft offshore and branches into two smaller diameter, 4,000-ft diffuser legs. The first 3,700 ft of the line, across the beach and in shallow water, were placed from a steel and timber trestle. Remainder of the line will be placed by the mobile platform from some 170 work positions.

• Developed by DeLong—The platform was developed by the DeLong Corp. It has a 190 x 122½-ft compartmented steel hull, 17 ft deep. Four wells near the corners of the hull accommodate the legs. The legs are of box frame construction, 275-ft-high, 17-ft-square and weighing 700 tons each.

The legs are raised and lowered one foot per minute by horizontal pin jacks. Automatic controls keep the jacks on each tower leg working together. Jacking operations are centered in a control room under one operator. Hydraulic power for the jacking operation comes from a battery of electrically powered pumps.

• Winches position platform—The platform is equipped with seven air-powered deck winches for positioning and advancing the unit. Four corner winches handle side anchors, two



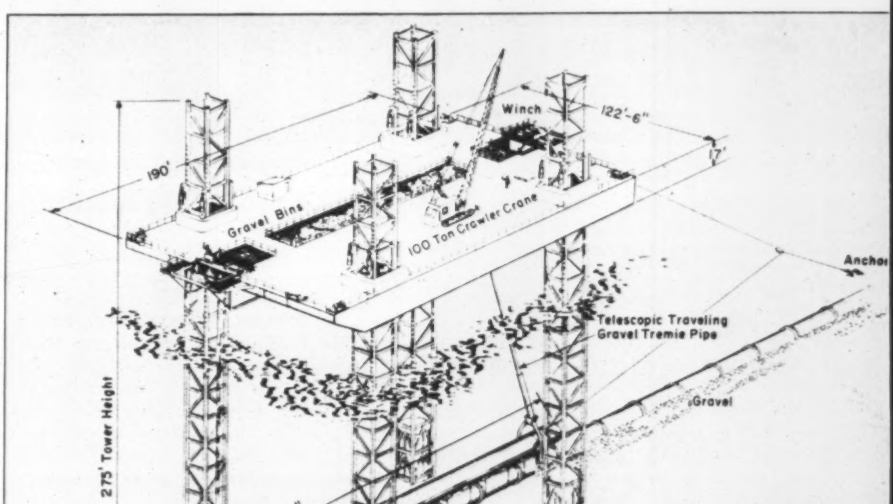
winches pontoon beneath it, sinks pontoon, draws pipe into place and tremies gravel around it, then refloats pontoon.

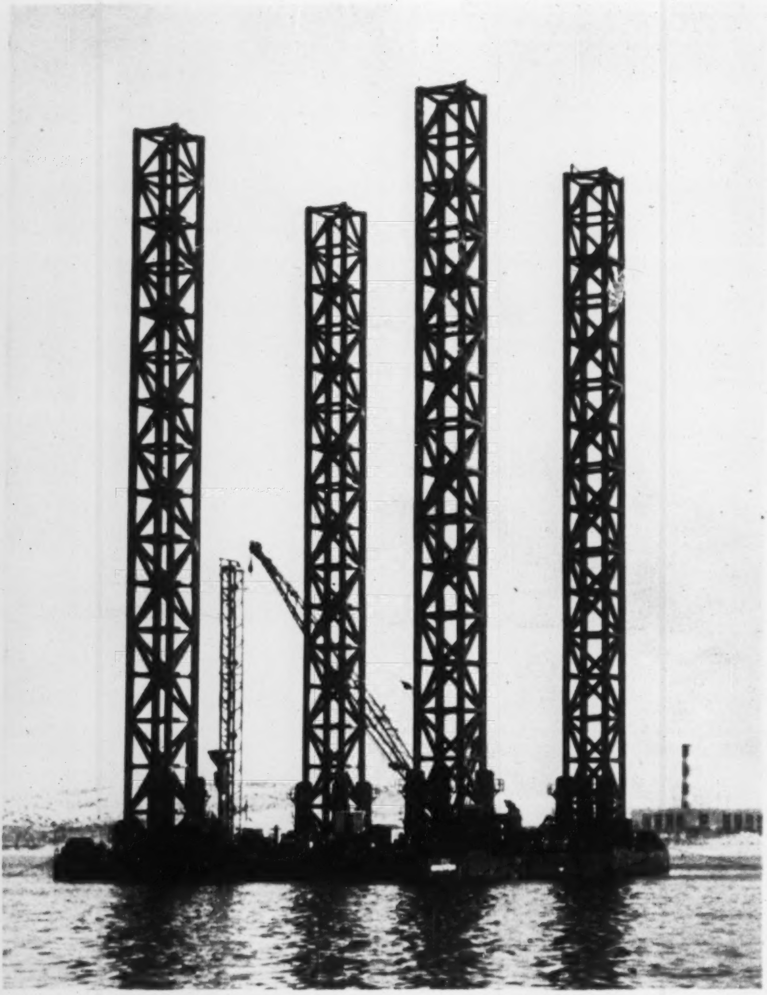
Under Way

winches are tied to bow and stern anchors and an additional stern winch hauls in the outfall pipe. All these winches have a 36-in.-dia drum and 51-in. face equipped to handle 1¼-in. wire rope. Pneumatic power is supplied by four 600-cfm compressors mounted on the platform deck.

Also mounted on the deck are two 4-drum car pullers. One positions the pontoon transversely, and the other pulls a gravel hopper back and forth underneath the platform.

Pipelaying is handled by two bridge cranes mounted on steel truss outriggers fore and aft of the platform. Each crane can travel 12 ft longitudinally and 12 ft transversely. This permits tolerance in locating the platform, which is guided by surveyors on shore. The bridge-crane winches lower the pipe-and-pontoon assembly almost to


Winch
122'-6"
17'
190'
Gravel Bins
100 Ton Crawler Crane
Anchor
Telescopic Traveling Gravel Tremie Pipe
Gravel
275' Tower Height
212'-0" Length of Pontoon



MOBILE PLATFORM weighs 4,500 tons, cost about $5 million. After pipelaying job, rig may be salable for oil drilling or other offshore work.

the ocean floor and hold it in suspension while the pipe is jointed and bedded.

The platform includes five gravel hoppers with a total capacity of 1,400 tons. Gravel bedding is placed through a telescopic tremie pipe riding underneath the platform and fed by a movable hopper chute.

Electric power is supplied by three 350-kw diesel-electric generators located in the platform hold along with fuel and water pumps and pumps for the jacks.

Four of the platform's watertight compartments serve as salt water ballast tanks. Other compartments store diesel oil, salt water and potable water.

The platform mounts a heavy crawler crane, mainly for filling the gravel hoppers from barges tied alongside but also for other heavy lifting.

The floating platform was fabricated by a group of San Francisco Bay area firms. The hull was made by Pacific Coast Engineering Co., the legs were fabricated by Kaiser Steel, and the jacks were made by Yuba Manufacturing Co., a division of Yuba Consolidated Industries. The platform assembly was handled by Maritime Equipment and Precast Concrete Corp. (now Yuba Erectors, a subsidiary of Yuba Consolidated Industries).

Moving the work platform from its assembly point at Richmond, Calif., was a spectacular operation in itself, involving close clearance under the Golden Gate Bridge and a five-day haul down the California coast (ENR Dec. 25, 1958, p. 24).

Cost estimates for the platform run in the neighborhood of $5 million. But the equipment may be salable later for offshore oil drilling or similar work.

• Pipelaying procedure—Pipe is towed to the work platform in 192-ft strings slung underneath a 212-ft-long, 14-ft-dia pontoon. A stern winch pulls the pontoon-pipe unit under the platform.

Several lines are then connected to the assembly. Multiple-part lines from the bridge-crane winches are connected to hooks at either end of the pontoon for lowering the assembly. Other winch-operated lines are connected to the pontoon ends for lateral positioning. Lines are tied to both sides of the movable gravel hopper on the pontoon. And hoses are connected to pontoon compartments to control ballast.

The pontoon is partly filled with water until the pontoon-pipe assembly has a negative buoyancy. It is lowered by the winches until the pipe is within a foot of the ocean floor.

Divers check the position of the pipe before the signal is given for the haul-in line to make the joint with the previously laid section. In deeper water, this type of inspection will be aided by underwater television.

With the outfall pipe suspended a foot off the bottom, gravel for bedding is deposited through a telescopic tremie pipe into a hopper on the pontoon and from there through two chutes that discharge on each side of the pipe at the spring line.

After the pipe is bedded, the pontoon is released and returned to the surface. However, before disconnecting the cable slings that hold pontoon and pipe together, the pontoon is filled with more water to prevent it from popping to the surface. The water is then gradually pumped out for close control of the upward movement of the pontoon.

• Pipe assembly—Pipe casting and assembly of the pontoon-pipe units is handled in a waterfront yard at Long Beach, some 20 miles away. Pipe is cast in 85-ton, 24-ft-long sections by a subcontractor, United Concrete Pipe Corp. Sections are assembled into the 192-ft strings on a submersible steel platform which is raised and lowered on its legs by jacks identical to those on the floating platform.

Eight pipe sections are laid in wheel mounted cradles or dollies on the platform and joined together. Platform and pipe are jacked below water and the pontoon is lashed to the pipe. Finally, the platform is again submerged and the buoyant pontoon-pipe unit is towed away.

• Trestle laid pipe—The first 3,700 ft of the outfall line was laid by a 100-ton gantry crane operating on a trestle. This unit placed pipe from high-water line into water deep enough for the work platform.

The inshore end of the line is comprised of 12-ft lengths with 15-in. walls. The seaward part of the trestle-laid pipe is 14-ft lengths with 12 in. walls. Both weigh 52 tons per section—about the limit for hauling over city streets.

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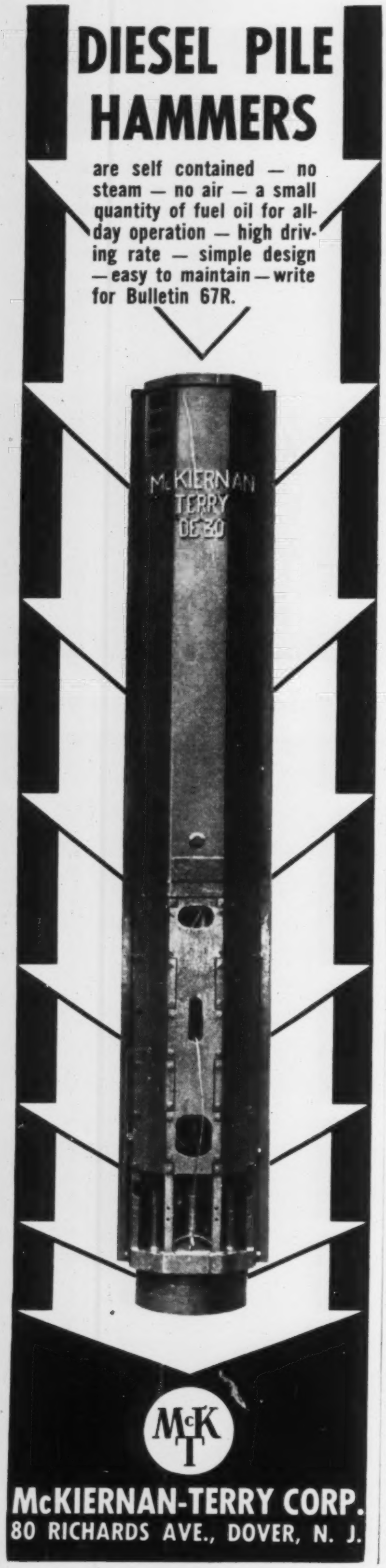

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• • • Biggest ocean pipelaying

was individually driven by 24-hp d-c electric motors. Power was furnished by a diesel generator.

The gantry straddled a section of pipe, carried it to position and lowered it into place. Joints were made by tightening a pair of 1½-in. dia holding bolts positioned 3 ft above the spring line.

The first 1,200 ft of the pipe through the surf area was placed between sheet pile walls and completely backfilled. The rest of the trestle-placed pipe went in a trench, with part of the pipe extending above the ocean bottom. Some of the pipe laid by the work platform was also placed in a trench, but much of it was laid on the ocean bottom (little scouring action is expected in deeper water).

The Hyperion effluent outfall construction is a project of the Los Angeles Board of Public Works, Rear Adm. Cushing Phillips CEC USN (ret.), president of the board. Design was by Hyperion Engineers, a joint venture of Holmes & Narver, Inc.; Daniel, Mann, Johnson & Mendenhall; and Koebig & Koebig. For the design joint venture, David L. Narver was project manager and David R. Miller was project engineer.

In addition, a consulting board was established to review both basic considerations and design. This consisted of a representative of each of the three design joint venture firms together with the city engineer and representatives of Richard Pomeroy & Associates and the Engineering Office of Clyde C. Kennedy. Participating in deliberations of this board were former city engineer Lloyd Aldrich and Norman B. Hume, who represented the city's Bureau of Sanitation, the agency that operates the completed projects.

Arthur Fertell is project manager for Hyperion Constructors. George Bauer is offshore superintendent in charge of the floating platform operations. J. M. Christensen was superintendent of the onshore (trestle) part of the job.

Inspection is by the Los Angeles Bureau of Inspection under W. T. Anderson.

Hyperion: A $60-Million Program

The effluent outfall construction is part of a $60-million, bond-financed program aimed at increasing capacity of the Hyperion sewage treatment plant. Present capacity is 245 mgd average flow. New capacity will be 420 mgd with storm flow capability of 600 mgd. This can be expanded to 720 mgd with installation of additional pumps.

The program includes conversion of the plant to primary treatment from a high-rate activated sludge process. This change is made possible by the 5½-mile effluent outfall. As a result of comprehensive oceanographic investigations made by the Hancock Foundation of the University of Southern California, city officials expect that the effluent will be thoroughly diffused with seawater by discharge at 200-ft depth and beneficial uses of the Santa Monica Bay will not be impaired.

Studies indicated that plant revisions and outfall construction would cost less than an expansion of the existing facilities. Operating costs are also expected to be reduced.

Under the program a spectacular 6½-mile ocean outfall for sludge and a pumping plant were placed in service in 1957 at a cost of nearly $3 million (ENR July 25, 1957, p. 33).

The program was developed by a citizens committee appointed by Mayor Norris Poulson. Consultants to the committee were the engineering firms of Clyde C. Kennedy of San Francisco and Pomeroy & Associates of Pasadena. Detailed design was handled by the city engineer's staff and by private consulting engineers. In general, the design work was divided as follows: Interceptors and relief sewers were designed by the city engineer's office; consulting engineers designed the Hyperion plant expansion, the outfalls and a major trunk sewer—the North Central Outfall, which went into service in 1958 at a $13-million cost.

The increased Hyperion plant capacity and the outfalls are expected to serve population growth of the city until the year 2000. But more relief and interceptor sewers will be needed soon.

Here's a list of other ENR stories on the Los Angeles program:

What's Next for Los Angeles Sewerage? Aug. 21, 1952, p. 32.

Sewage Disposal Plans Contested, Feb 25, 1954, p. 26.

City Bans Building, Feb. 24, 1955, p. 26.

The Two Sides of the Los Angeles Sewage Disposal Question, Nov. 24, 1955, p. 46.

The Big Switch at Hyperion, April 5, 1956, p. 27.

New Pollution Control Formula, May 10, 1956, p. 28.

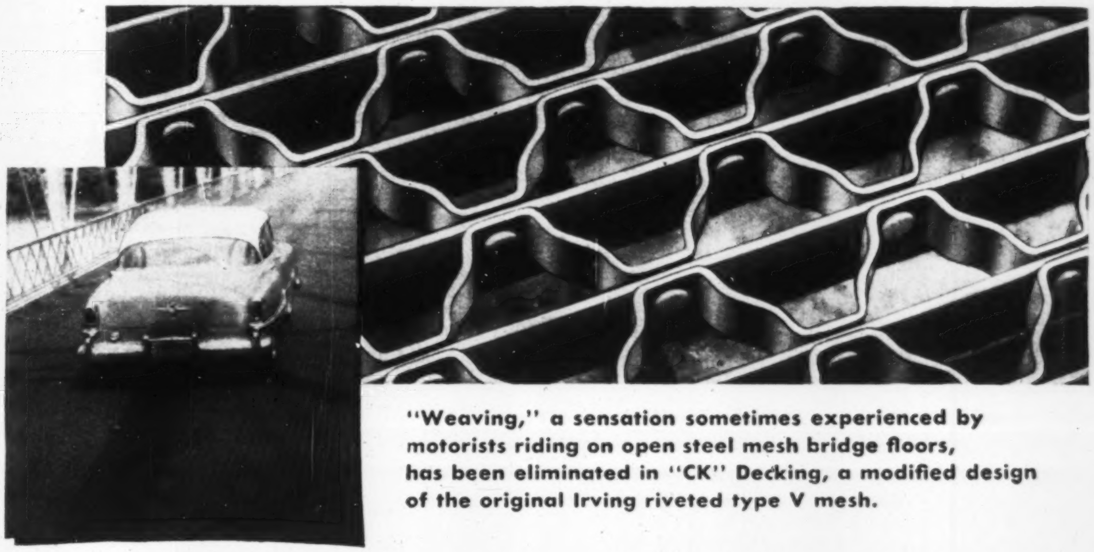
Ocean Outfall Bids, May 23, 1957, p. 28.

Mechanization Speeds Tunnel Lining, April 3, 1958, p. 43.

Biggest Work Stage Goes to Sea, Dec 25, 1958, p. 25.

NEW DECKING ENDS WEAVING ON BRIDGES

Field Tested "CK" Decking Gives Improved Riding Quality!



"Weaving," a sensation sometimes experienced by motorists riding on open steel mesh bridge floors, has been eliminated in "CK" Decking, a modified design of the original Irving riveted type V mesh.

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A City Cuts Resurfacing Costs

A cheaper way to resurface oiled-gravel (asphalt-surface-treated) streets has been developed by Portland, Ore.

The method uses the relatively new RS-K emulsified asphalt (cationic emulsion). RC-3 cutback asphalt was formerly used.

In the 1958 season, RS-K was used for more than 80% of a program involving more than 1 million sq yd of seal-coat work. Cost for the entire program averaged out at 12 cents a sq yd. This compares with an average cost of 16½ cents a sq yd for the 1957 program that included more than 850,000 sq yd of oiling, mostly with RC-3 emulsion.

• Developed in Europe—The cationic emulsions have been used in Europe for some time. They were introduced into the U.S. in 1957 by American Bitumuls & Asphalt Co. under the trade name Cationic Bitumuls. They are now offered by other manufacturers.

Main advantages claimed for the product are: ability to coat wet aggregates; and adhering qualities on siliceous gravels and sandstone.

This means that the material can be safely used in uncertain weather conditions, and could well be used to extend the road surfacing season into the spring and late fall months. It can also be used with aggregate previously considered unsuitable.

While the material does not have good adhering qualities on pure limestone aggregates, it can be used with limestones containing some siliceous material. And it can be used on granite and other similar siliceous rock where ordinary emulsions are not effective.

Cationic emulsions may be made using a quarternary ammonium salt as an emulsifier, with the oil soluble part of the molecule being cation active. This produces droplets carrying a positive charge. These droplets are attracted by the negative charge found on most wet or siliceous rock.

Ordinary emulsions are generally made using alkali metal salts as emulsifiers. This produces an emulsion with a negative charge on the droplets.

• Size of the job—Portland has 1,249 miles of city streets; 664 miles are hard surfaced, 423 miles are oiled gravel and 162 miles are unimproved. A program to resurface 50 to 60 miles of the oiled-gravel streets each year is underway.

These streets are intended for light residential traffic only. Routine heavy trucking is not permitted on them and city bus runs are not routed over them.

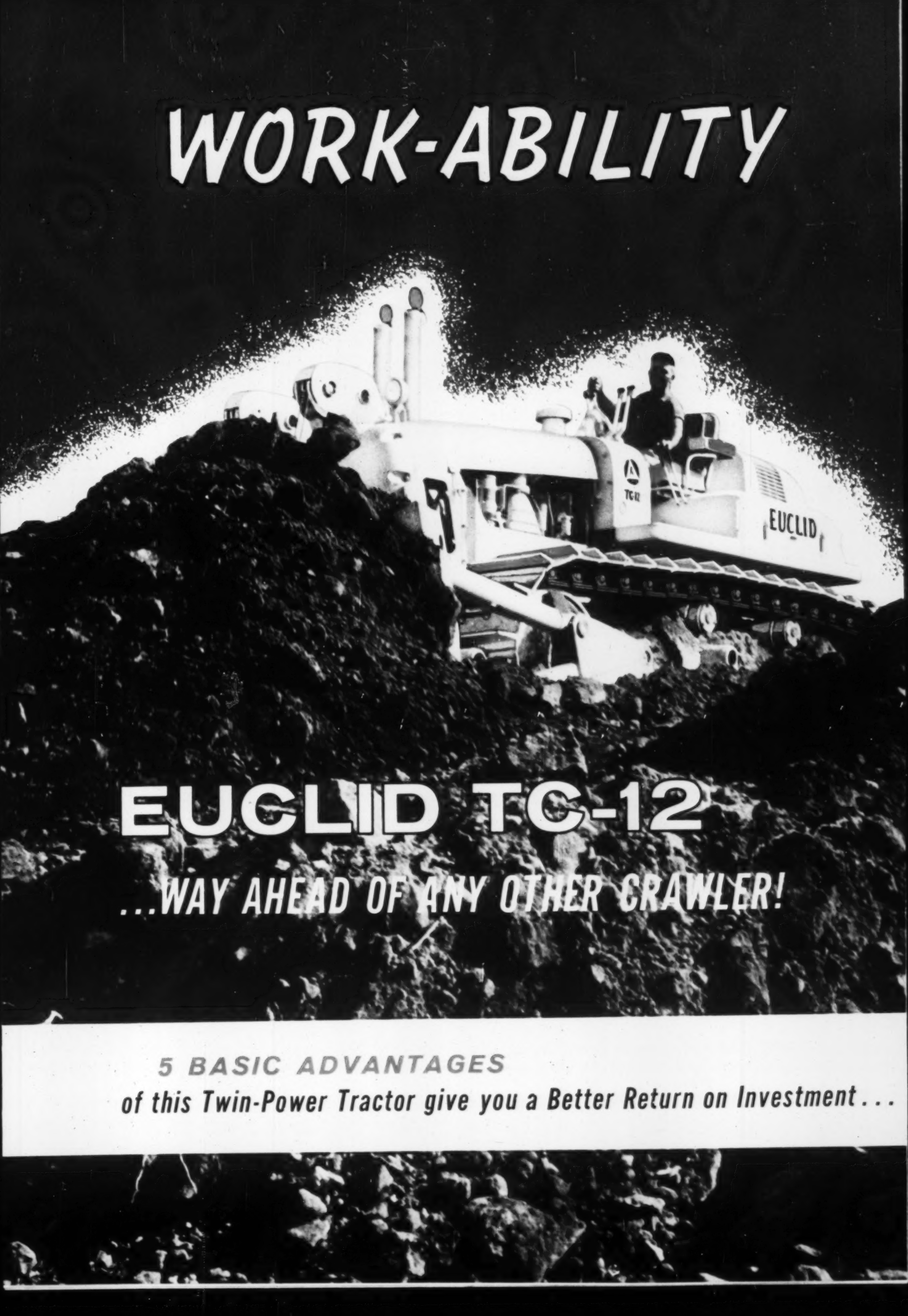
The Portland seal-coating program is restricted to the dry season—May to October. (Portland has an average rainfall of about 40 in., with the monthly average less than 2 in. for May, June and September and less than 1 in. for July and August.)

• Advantages and procedure—Primary advantages of the new program are: less aggregate is required; a smaller crew is needed; resurfacing work is quicker; less emulsion is used. Result: smaller total cost.

A single surface treatment of about 0.2 gal per sq yd is applied. This is followed by about 25 lb of crushed river gravel per sq yd in the ¼ in. to No. 10-mesh size range. Chuck holes are previously patched with a cold-asphaltic mix and surface dust is broomed off.

The former method, using RC-3 cutback asphalt, required 0.3 gal per sq

WORK-ABILITY



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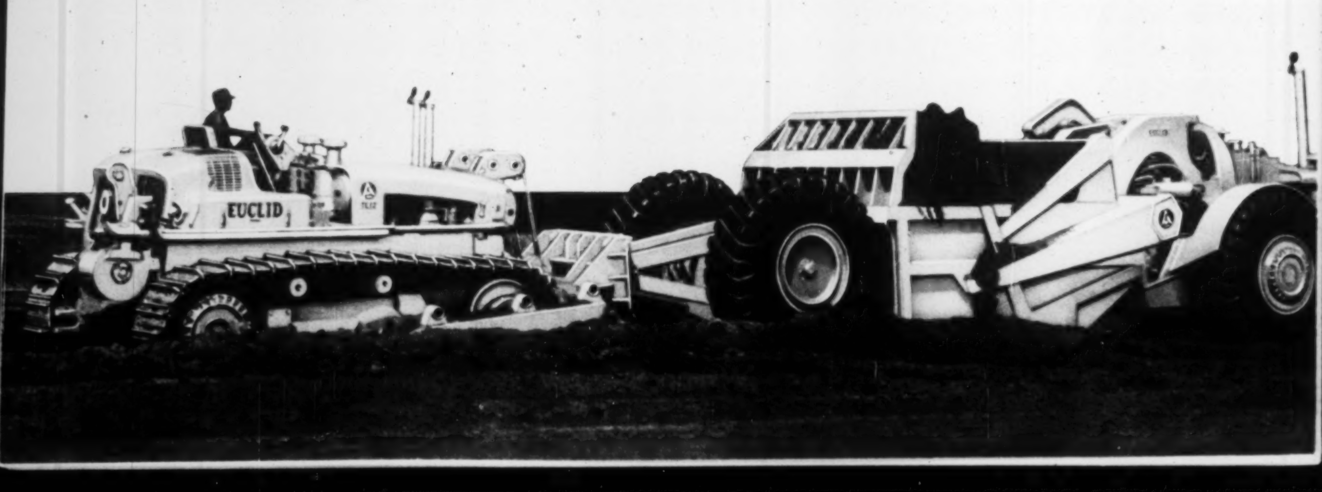

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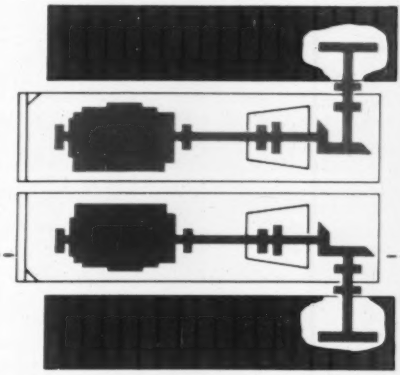

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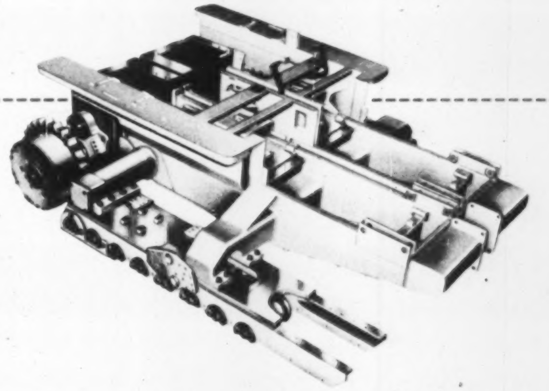

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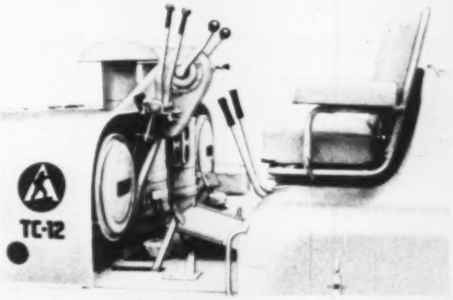

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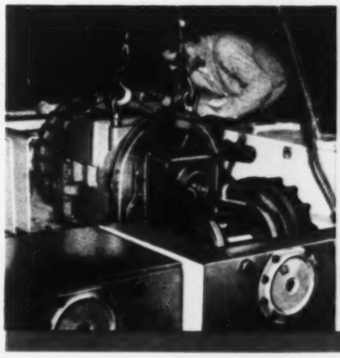

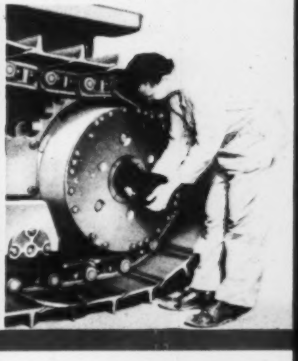

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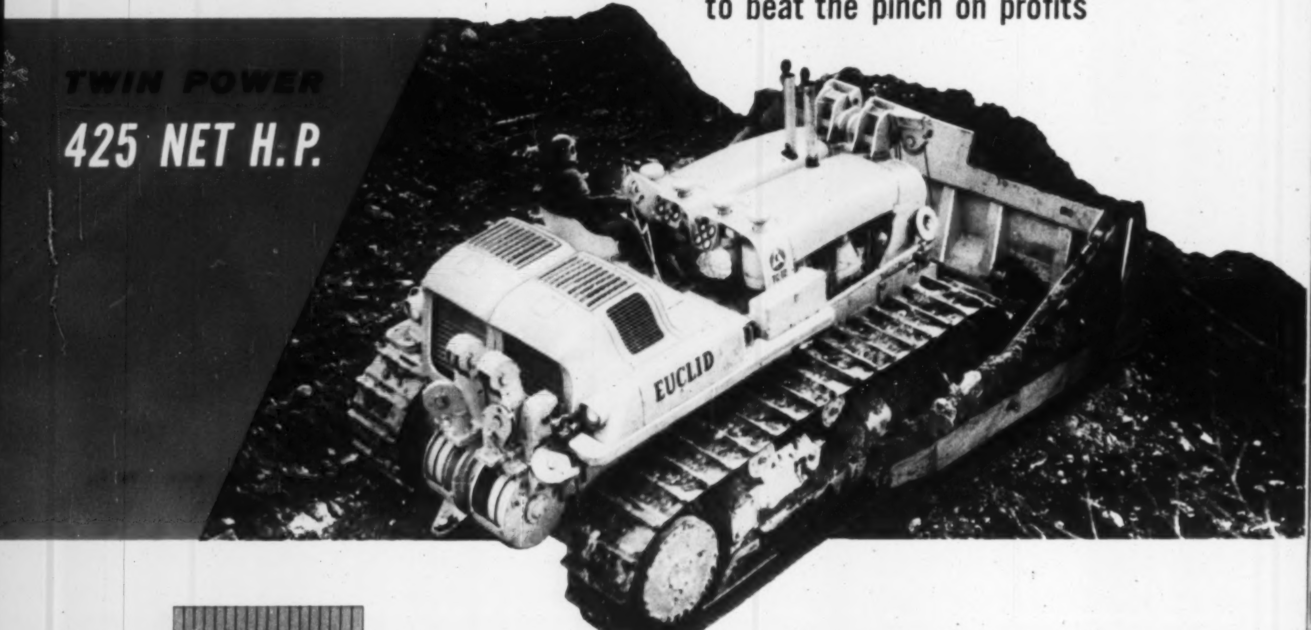

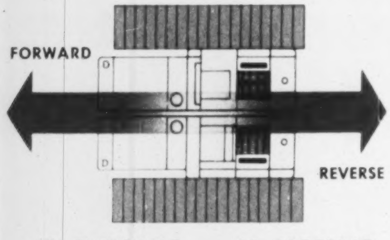

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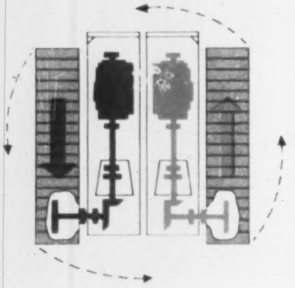

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yd. And two gravel applications were needed. An initial application of ½- to ¼-in. crushed rock was rolled. It was followed by another application of ¼-in. to No. 10-mesh gravel. Thus one of the main differences is in the number of rock applications and amount of rolling.

Gravel used at Portland is generally wet. Cationic emulsion is better able to adhere to this wet gravel than ordinary emulsion. In fact, Portland had included an additive to improve the wet aggregate adhering qualities of the KC-3 emulsion.

A marked difference with the new emulsion is that it sets up quickly. Thus the rock application must be made in from 20 seconds to 2 minutes after applying the emulsion. Rolling is undertaken some 20 minutes later, with two passes of a solid roller needed.

Street crews generally resurface three to four city blocks at a time, completing the work in less than an hour. Traffic is permitted on the street immediately.

The cationic emulsion is spread at about 110 F. It is already heated when picked up by city trucks direct from the seller.

The streets are shot in 8-ft widths, although one of the emulsion distributors can run a 4-ft strip. Handspray is used for gutters.

Rock is spread by a city-built spreader box that uses a 4-in. soil pipe to spread gravel just one rock thick.

• **Life and care**—Portland officials estimate the effective life of such resurfaced streets at about five years—or at least as long as streets resurfaced with other oiling methods. Other advantages cited: The cationic seal coat does not bleed; the spray can be closely controlled to prevent spray damage to automobiles.

In applying cationic emulsions, care must be taken to keep the equipment clean. If the equipment previously contained ordinary emulsions, the cationic emulsion will break down. Diesel oil is run through the equipment every night after use to clean it. During winter months the rigs are completely overhauled.

Portland officials hope to have a hard surface on all new streets and eventually to replace all oiled-gravel streets. But complete replacement will be an expensive proposition. It will have to be a long-term program spread over many years.

The resurfacing program is under the direction of Gordon L. Burt, Portland city engineer, and R. Ray Schieve, superintendent of streets. The program was started in June, 1958, and is continuing on an expanded scale in 1959.

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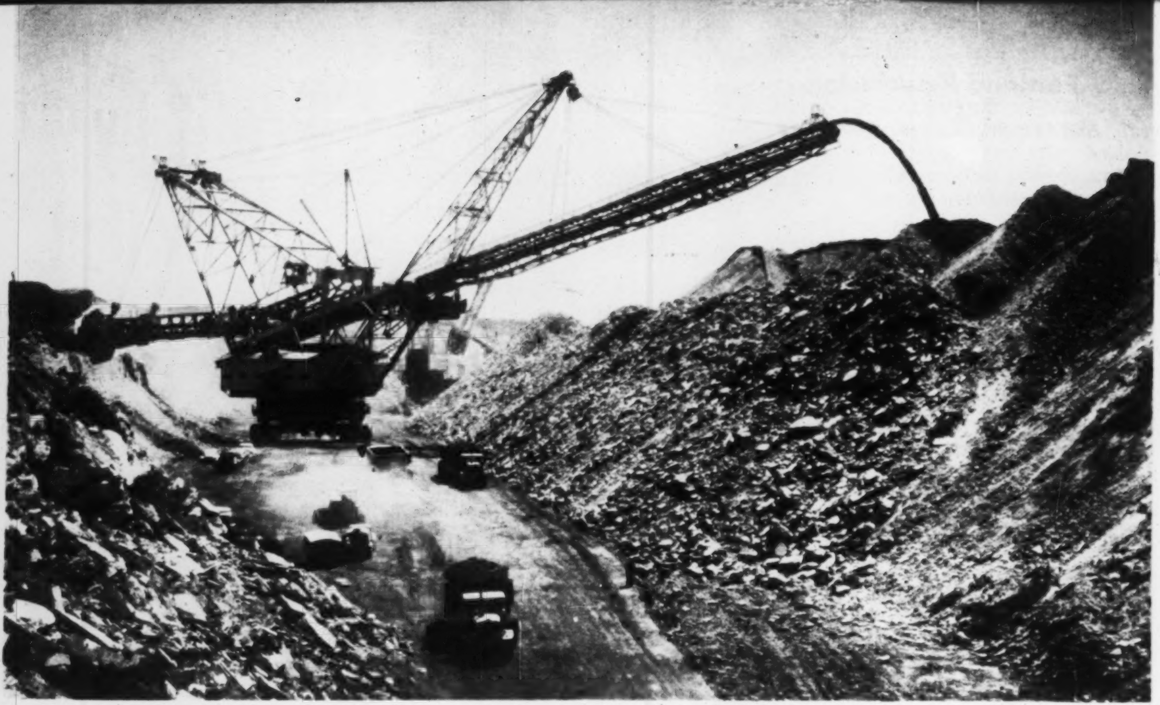
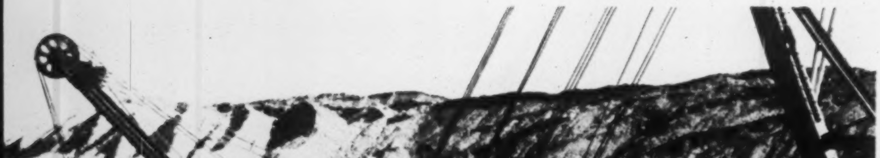


Biggest U. S. wheel excavator weighs 2,100 tons, has capacity of 3,500 cu yd per hour.

Excavators Come in Giant Economy



U. S. MACHINE'S digging wheel is 27 ft in diameter, carries ten 2.5 cu yd buckets.

Although earthmoving is basically a construction operation, the biggest pieces of excavation equipment are found in coal stripping work. Thus the first public demonstration of what was billed as the "largest earthmoving machine ever built in America" came June 17 at a strip mine near Canton, Ill.

Called the Kolbe wheel excavator, this massive machine weighs 2,100 tons, digs 3,500 cu yd of overburden per hour with its 27-ft-dia wheel, and transports it by belt conveyor to a spoil bank 420 ft away. It was developed by Frank F. Kolbe, president of the United Electric Coal Companies, and his engineering staff.

Three other Kolbe wheel-type excavators have been developed since 1943, each larger and better designed than the last, but the largest has only half the capacity of the latest giant.

Wheel excavators are not common in the U. S., where most coal stripping work is done by huge electric power shovels, the largest being a 70-yd Marion which has a maximum production rate of about 3,200 cu yd per hour.

In Germany, however, most of the brown coal in the Ruhr area around Cologne is exposed by wheel-type excavators, many of which are far bigger than the Kolbe machine.

One of the newest models manufactured by Orenstein-Koppel und Luebecker Maschinenbau of Lubeck, for

Germany's biggest is 5,800 tons, chews out 6,000 cu yd per hour.

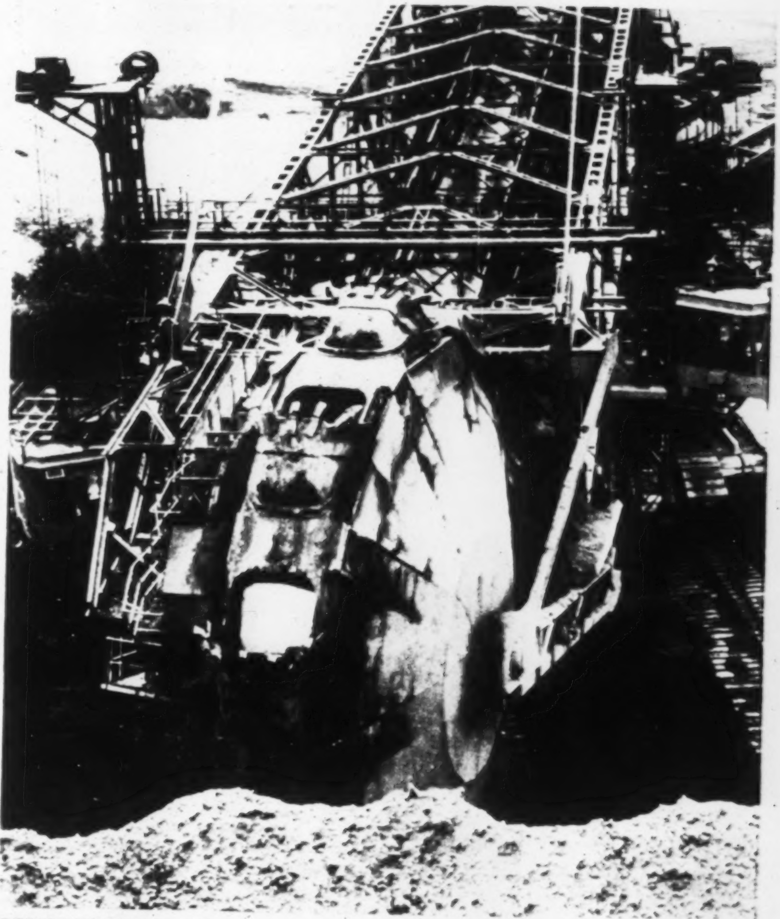
Size

example, weighs 5,800 tons, uses a 52-ft-dia wheel, and is rated at 6,000 cu yd per hour. While the Kolbe wheel will excavate a face 100 ft high, the comparable figure for this huge German unit is 227 ft. The German machine is said to cost about $7 million.

What the Kolbe machine lacks in size, however, it may make up in efficiency. Its 27-ft wheel is equipped with ten 2.5-cu-yd buckets and operates at 8 rpm. The 52-ft German wheel is equipped with ten 3½ cu yd buckets and operates at 6 rpm. The discharge belt of the Kolbe wheel also moves at a faster rate—1,225 ft per minute compared to 850 ft per minute for the German machine.

The Kolbe wheel's peripheral speed is only 675 fpm. To achieve the high, final belt speed, excavated material is discharged from the wheel onto rollers. The rollers accelerate it so that it can drop, without piling up, onto the ladder or boom belt, which travels at 910 fpm. From here, the material can then be transferred readily to the stacker belt, which moves at 1,225 fpm.

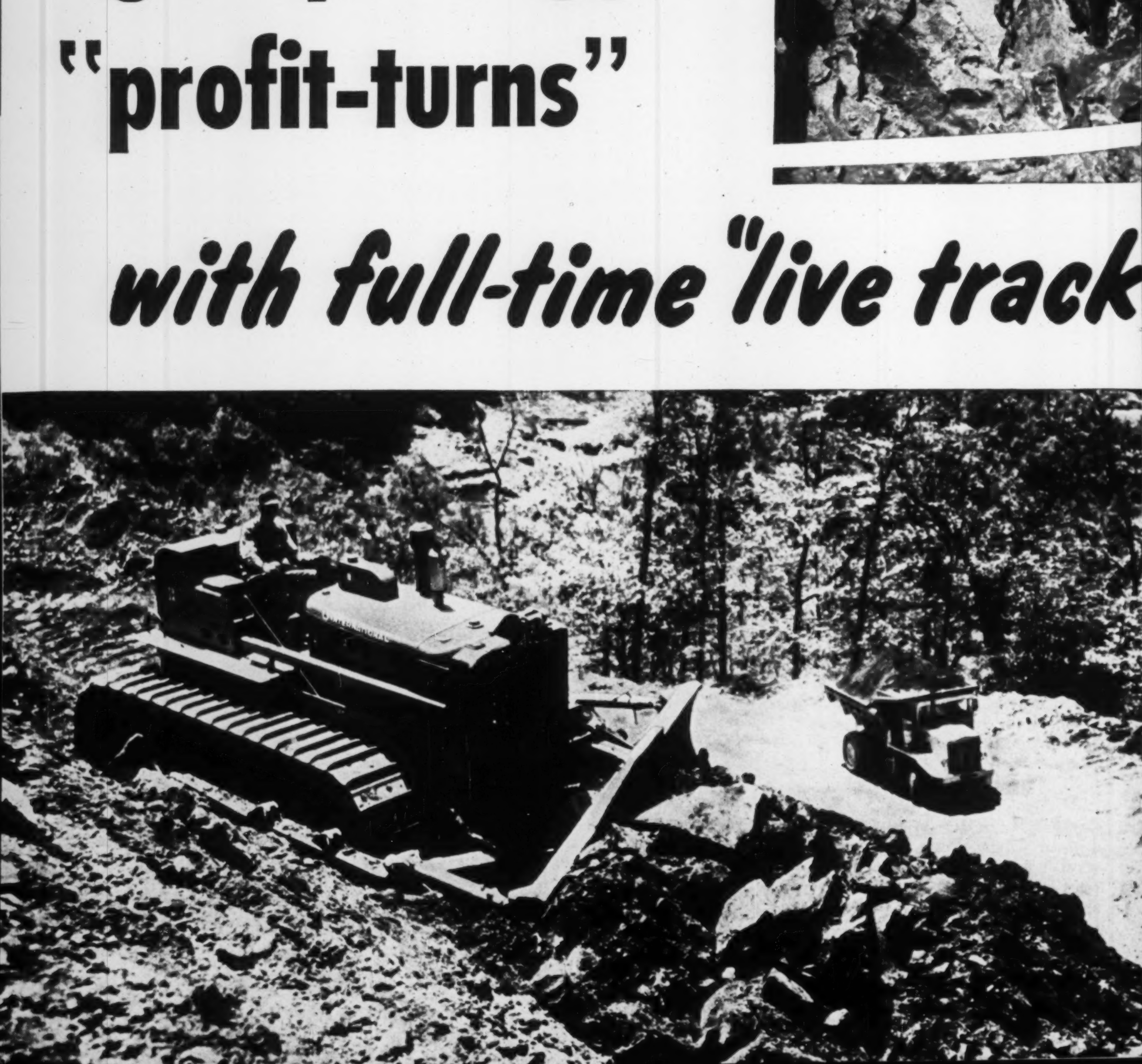
The only problem occurs when the dropping of heavy loads would cause a shock. This, however, is solved by special heavy duty idlers under the stacker belt. The idlers can depress and swing forward to permit the belt to "ride with the punch" of such loads as large boulders.



GERMAN WHEEL is 52 ft in diameter, carries ten 3.5-cu-yd buckets.

How TD-24's give you bigger "profit-turns"

with full-time "live track



Even blading shot-rock 'round the "corner"—where clutch-steered king-sized crawlers so often spill the "pay" part of the load—the International TD-24 makes full-profit passes! View shows one of two TD-24's at work on U.S. 60 north of Globe, Arizona, for Flickinger Bros. Contracting Co.

steering!

Often your International TD-24 operators can hand you an enormous paydirt dividend—as big as 50%—compared to other big crawlers that "half kill" their power on turns. The big difference: exclusive, years-proven TD-24 Planet-Power steering!

Planet-Power steering gives you full-time "live" power on both TD-24 tracks—full-time separate and positive control of each track! And full-time on-the-go power-shifting!

"Dead-track drag" is eliminated

Blading 'round curves, benching, bank-cutting or side-casting, the TD-24's dozer keeps cutting—keeps paydirt on the move—doesn't spill your extra-profit margin. Both tracks keep pulling. Load-limiting "dead-track drag" is eliminated. You get full-bite, full-blade performance where other rigs only "nibble"!

"Bank-nosing," rear-end slueing, are eliminated without loss of speed or traction! TD-24 operator simply operates the load-side track in high speed range while keeping the outside track in low range. Result: full-capacity, straight-ahead performance, despite the big offset load! Owner J. C. Critcher, Asheville, North Carolina, reports: "TD-24 planetary Hi-Lo steering keeps the blade digging more yardage in less time, with minimum side slip."

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Hi-Lo power-shifting, too.

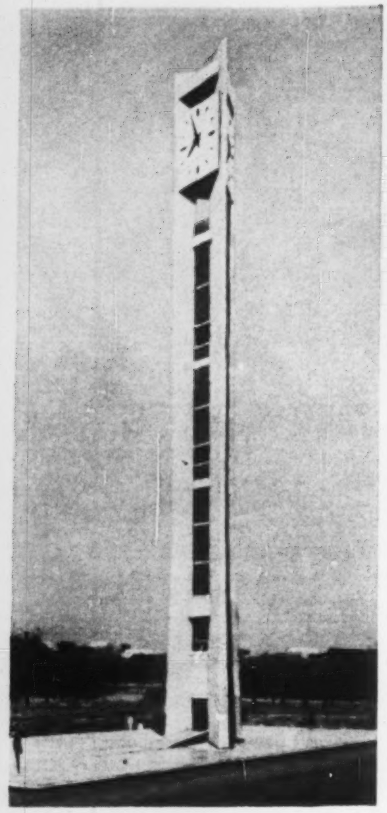
And Planet-Power steering gives you famous Hi-Lo range power-shifting. You instantly adjust speed to the load without stopping or declutching, going forward or in reverse, simply by flicking steering levers into the proper range—with 2-finger ease. You clip vital minutes from shuttle-dozing cycles!

At the end of the pass, simply press the TD-24's decelerator for quick-shifting to fast reverse; zip back for another full-blade pass. Hi-Lo planetary levers give two separate speeds in any forward or reverse gear selected!

Prove what it means in profits to get Planet-Power steering paydirt dividends of up to 50%. Discover the satisfaction of beating anything else on tracks—with fingertip ease. See your International Construction Equipment Distributor for a TD-24 demonstration!

International® Construction Equipment

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois



THREE CLOCK FACES on tower will symbolize the three branches of government.

THIS $400,000 MEMORIAL HALL, with a 102-ft-high clock tower (left), will be set in an international park. It will be a . . .

Statesman's Memorial in Tokyo

A memorial hall and clock tower will be built in Tokyo to honor the late Yukio Ozaki, a Japanese statesman.

Plans call for a 7,500-sq-ft memorial hall and 102-ft-high tower set in a 16-acre International Park opposite the Diet Building in downtown Tokyo. The hall, to cost $400,000, will contain a 500-seat lecture hall, several conference rooms, a library and an exhibition hall.

The clock tower next to it will have three faces, representing Mr. Ozaki's strong advocacy of government power balanced in three equal divisions—legislative, judicial and administrative. Cost of the clock tower is estimated at $30,000. The entire construction cost will be raised throughout Japan and the rest of the world by subscription.

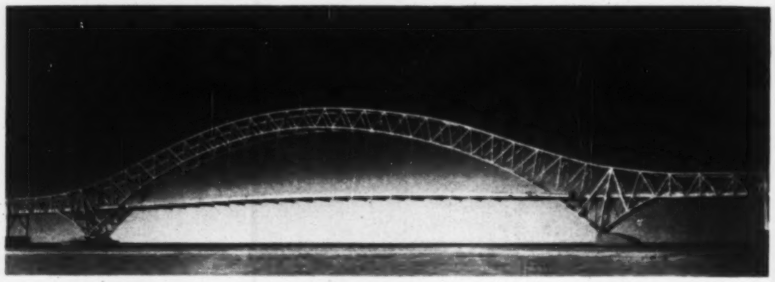
Mr. Ozaki is best known in the U. S. as the man primarily responsible for the gift to the U. S. of the cherry trees that surround the Tidal Basin in Washington, D. C.

Japanese architect Ichiro Ebihara designed the project. Construction has already started and will be completed this October.

Steel Arch Bridge Goes Up Near Liverpool

The world's third-longest steel arch will form the main span of the Runcorn-Widnes Bridge now being erected over the Mersey River and the Manchester Ship Canal near Liverpool, England.

The bridge's 1,082-ft arch will be exceeded in length only by those of the Bayonne Bridge between Bayonne, N. J., and Staten Island, N. Y., (1,652 ft) (ENR June 11, p. 38) and the Sydney Harbor Bridge in Australia (1,650 ft).



Total length of the Runcorn-Widnes Bridge, including two side truss spans, will be 1,632 ft. Half of its 5,380-ton weight will be high strength steel.

The arch will be erected by the same method used for the Sydney Harbor Bridge. Both side spans will be built on falsework and will help counterbalance the weight of the half-arches as they are erected outward and upward to meet at the crown.

The cantilevered arches will get additional support from cables attached to the upper chords and passing over temporary masts above the main pins to anchorages embedded in rock on the shore.

The bridge will carry a 33-ft roadway and two 6-foot sidewalks about 90 ft above the river. Longitudinal stringers supporting the reinforced concrete deck of the roadway will rest on cross girders suspended from the lower chord by steel wire rope hangers 2¾ in. in diameter.

The lower chord of the arch will be an arc of a circle passing through the main pins that rest on skewback concrete piers. The upper chord, 250 ft high, is a circular arc for approximately half its length. It reverses its curvature near the quarter points of the main span and flattens out into the side spans.

Mott, Hay & Anderson, of London, designed the bridge. Dormon-Long Ltd., of Middlesbrough, is the contractor. The bridge is scheduled for completion in autumn of 1961.

Field and Office

Grout Under Base Cuts Compressor Vibrations

Chemical grout pumped into soil below an air-compressor base considerably reduced amplitude of vibrations in a General Electric Co. plant in Lynchburg, Va.

The Y-type compressor, rated at 225 brake hp and seated on a 2½-ft-thick slab, had created vibrations thought sufficient to crystallize piping joints. Transmitted through soil beneath the slab, these vibrations were causing annoyance and minor damage in an adjacent boiler room.

Soil was stabilized to a depth of 7½ ft below the compressor's foundation slab. Four-inch cores were cut through the 12x7-ft slab at points near the four corners of the compressor. Through these holes the soil was augered to the 7½-ft depth. Perforated tubes with 2-in. OD, and with rubber sleeves covering their perforations, were then placed in the holes and grouted into place with neat cement.

Before injecting chemical grout, a cement-clay grout was forced into the soil-slab interface. Then a polymerizing vinyl type plastic in aqueous solution was injected into the sandy silt at four stages in each of the four holes.

Natural frequency of the vibrating system was changed from a near-resonant 948 vibrations per minute to a non-resonant 1,176 rpm, reducing amplitudes by more than 60%.

The work was done for GE by Chemject Corporation of Evanston, Ill.

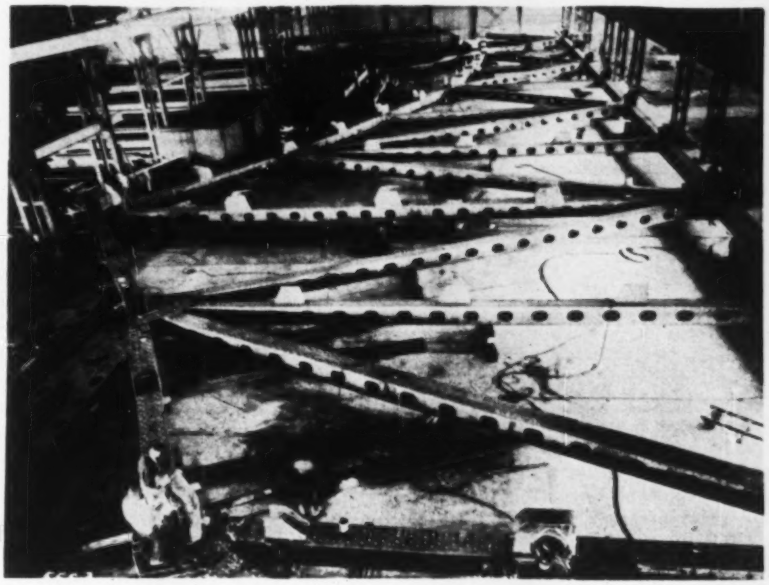
Accounting Wrinkle Cuts Water Cost $76,000 a Year

Dow Chemical Co. saves $76,000 a year on plant water costs at Midland, Mich., simply by charging each department with its full share.

Instead of amortizing intakes, distribution mains, sewers and treatment plants against general factory expense, the plant charges each water-using department with its proportionate share of the cost.

"This was one of the best water conservation measures we ever adopted," says W. H. Schuette, vice president and general manager of Dow's Midland Division. "After the air had cleared, we found our high-pressure water use reduced by two billion gallons a year, and this translated into a savings in pumping and distribution costs of more than $76,000 yearly.

"In addition," Mr. Schuette reports, "we now find that we can build more plants in a given area without water main or sewer expansion."



Final Fitting for a Bridge

Like a king-size Erector set, a 182-ton riveted steel section of a three-span cantilever bridge truss was fully assembled for reaming and drilling pin holes and checking out final dimensions before it was shipped.

Triangular measurements were used by structural steel engineers to get perfect alignment of the section. It is one of eight built by the Structural Steel Division of R. C. Mahon Co., Detroit, for the north-south highway bridges over the Grand River at Painesville, Ohio.

The section, lying on its side, measures 93 ft at its widest point and 714 ft long.

Two of these sections are required on each side of the two 3-span bridges Mahon is building for the Ohio State Highway Department.

Normally, this assembly work is done out of doors. But Mahon's large plant permits it to be done inside.

School Officials Control Speed

A school-zone speed limit sign that is turned on and off by school officials has been developed by the Michigan State Highway Department.

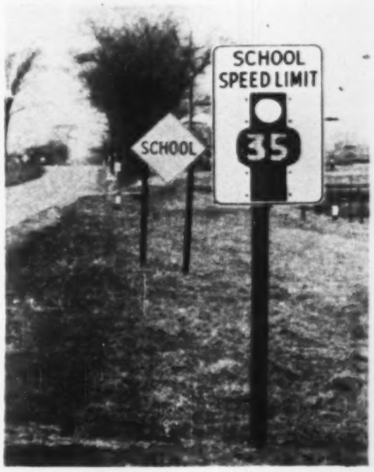
Speed limit—usually set lower than regular posted speeds—is declared by red-lighted figures.

Yellow flashers below and above the speed indicator still further attract the driver's attention. The 24x36-in. sign also carries the legend "School Speed Limit."

The figures and flashers are turned on while children are going to and from school.

Installation costs are estimated between $500 and $1,000 for a pair of signs.

The sign has been recommended for official use by State Highway Commissioner John C. Mackie.



How Much Plumbing for Schools?

A study of plumbing-fixture requirements of school buildings shows that the number of units needed cannot be determined from a fixed formula. The researchers recommend more flexible criteria than the conventional and arbitrary fixture-pupil ratio.

A survey of existing facilities convinced the researchers that plumbing requirements varied from one school to another. For example, when washroom schedules are staggered, a smaller fixture-pupil ratio can be adopted than when fixed morning and afternoon periods are assigned for washroom use.

This conclusion led the researchers to determination of the maximum ratio that could be required for the most unsatisfactory school schedule and the minimum ratio for optimum planning. These ratios for different types of fixtures are given in an accompanying table. The correct ratios for an average school should be between these extremes.

The study also shed light on other factors, such as desirable mounting heights (see table), quality and type of equipment that should be used, water use and the effect of contemporary trends in school design.

The study was made by Stanford University under the sponsorship of the Plumbing Fixture Manufacturers Association and a group of manufacturers. Copies of the report, "Plumbing Fixtures for Educational Facilities," can be obtained for $2 each from the School Planning Laboratory, School of Education, Stanford University, Stanford, Calif.

Recommended Fixture-Pupil Ratios

GRADES		FIXTURE STUDENT RATIO min.	FIXTURE STUDENT RATIO max.
TOILETS:			
K-6	boys	1:20	1:40
	girls	1:15	1:35
7-12	boys	1:30	1:50
	girls	1:20	1:40
URINALS:			
K-6	boys	1:15	1:35
	girls	*	*
7-12	boys	1:15	1:35
	girls	*	*
LAVATORIES:			
K-6	boys	1:25	1:45
	girls	same	same
7-12	boys	1:30	1:50
	girls	same	same
DRINKING FOUNTAINS: minimum two per floor			
K-6		1:30	1:50
7-12		1:40	1:60
SHOWERS: grades 7-12 only			
Physical education areas		1:3	
Other areas		as needed	

* Insufficient data

Initial Segment Enrollments

NO. OF PUPILS		TOILETS	URINALS
15 or less	boys	1	1
	girls	2	—
16 to 35	boys	2	2
	girls	3	—

NO. OF PUPILS		LAVATORIES	DRINKING FOUNTAINS
15 or less	boys	1	1
	girls	1	1
16 to 35	boys	2	2
	girls	2	2

Recommended Fixture Mounting Heights

GRADES		MOUNTING HEIGHT
TOILETS:		
K-3		13 in. (floor mounted)
4-12		15 in. (wall mounted)
URINALS: maximum height lip to floor		
K-3		18 in.
4-6		20 in.
7-9		22 in.
10-12		24 in.
LAVATORIES: maximum height rim to floor*		
K-1		24 in.
2-6		27 in.
7-12		31 in.
WORK SINKS: maximum height rim to floor**		
K		24 in.
4-6		27 in.
7-12		31 in.
DRINKING FOUNTAINS: maximum height nozzle top to floor		
K-3		24 in.
4-6		28 in.
7-12		34 in.
SHOWERS: average height bottom of shower head to floor		
7-9	boys	56 in.
	girls	54 in.
10-12	boys	60 in.
	girls	56 in.

* Height based on 6 in. basin depth
** Height based on 8 in. basin depth

Paint Sticks Better to Alloy Steel, Tests Show

Paint gives better protection against corrosion to nickel copper high-strength low-alloy steels than to ordinary structural steel. This is the conclusion arrived at by corrosion engineers of International Nickel Co., Inc., both from laboratory exposure tests and observation of commercial structures.

The evidence of more than a decade of investigation of this phenomenon by F. L. LaQue, J. A. Boylan, H. R. Copson, C. P. Larrabee and others can be summed up this way:

- Nickel-copper, high-strength, low-alloy steel deteriorates more slowly than ordinary structural steel when both are exposed unpainted in marine or industrial atmospheres.
- A 50-80% differential favoring low-alloy steel is exhibited when both types of steel are exposed after being painted.
- Paint life is longer with nickel-copper steel.

Observation shows that when rust forms on low-alloy steel, it is finer textured and consists of a thinner, less permeable film. This affords more protection than the rust layer that forms on ordinary structural steel.

The difference in paint life stems from the fact that most paints are somewhat permeable to moisture. As a result, rust forms gradually under the paint. But the more voluminous rust that forms on ordinary steel ultimately undermines the film, leading to more rapid failure of the entire coating. In contrast, the thinner layer of corrosion products that forms on low-alloy steel allows the paint to adhere longer, there is less pitting of the metal and less loose rust. A better surface is left for repainting when that is necessary.

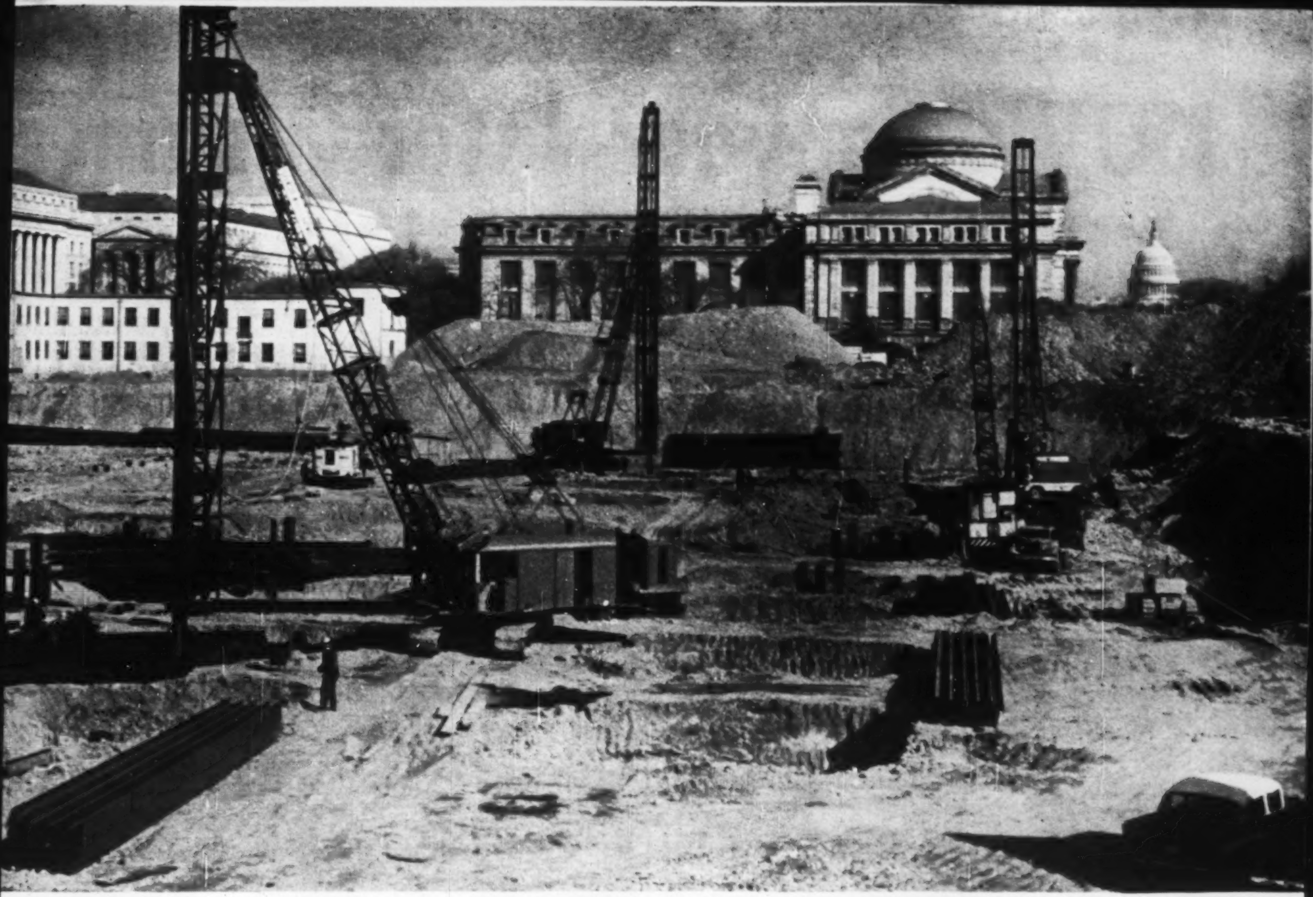
International Nickel's corrosion engineers estimate that good paint can last at least 50% longer on low-alloy steel than on ordinary structural steel.

Low-alloy steels are covered by American Society for Testing Materials Specification A242.

Seattle to Try Dumping Sludge in Puget Sound

Seattle is going to experiment for a year with discharge of sewage sludge into Puget Sound.

Under a program approved by the city council, a $120,000 sludge outfall line will be built from the city's new Alki Point treatment plant and the sludge dispersion will be checked by a U. of Washington research team.



Architects of the Smithsonian's new museum building are McKim, Mead & White. *Associate architects:* Mills, Petticord & Mills; *foundation consulting engineer and structural engineer:* Severud, Elstad & Krueger; *general contractor:* Spencer, White and Prentiss.

160,000 linear feet of steel H-piles for new museum in Washington

Foundation work for the Smithsonian Institution's new Museum of History and Technology in Washington, D. C., required over 4,000 tons of steel H-piles—approximately 160,000 linear feet—supplied by Bethlehem. The steel piles are about 53 ft in length.

The new $36 million museum will rise on the famous Mall of the nation's capital, not far from other buildings of the Smithsonian. In order for pile-driving operations at the subgrade level to be carried out, two heavy-duty pumps worked 24 hours a day to keep water from the excavation. It was estimated that if it were not for the pumps, the site would be under 10 ft of water.

Steel H-piles, used more than ever for the foundations of multi-story, monumental type buildings, are economical. They carry high loads per pile with a liberal factor of safety.

For full information on Bethlehem sheet and H-piles, get in touch with our nearest sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

NOW...a year later...same still leads in availability ...with 96.1% working record

—for Southern California Edison Co.,
Los Angeles, Calif.

"95" Payhauler fleet delivers 98.5% availability

highballing rock loads over High Sierra grades

FOR SOUTHERN CALIFORNIA EDISON CO. LOS ANGELES

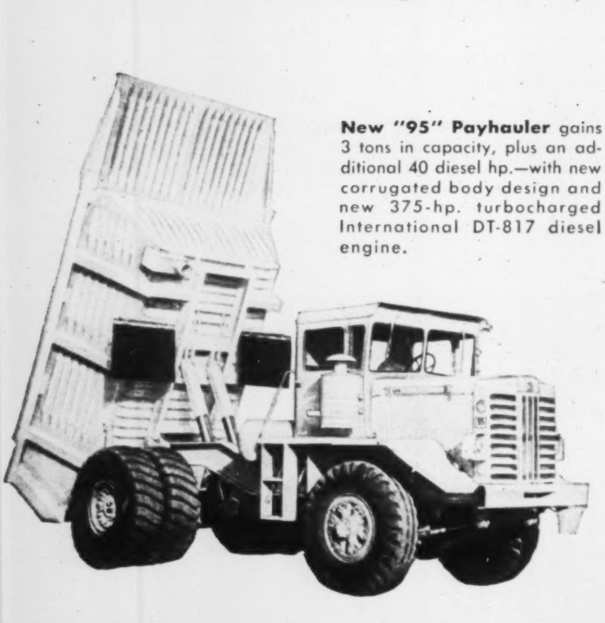
International Construction Equipment

A year later, in 1959, still meeting and beating machine-mauling High Sierra rock-hauling conditions—on Mammoth Pool Hydroelectric Project, for Southern California Edison—the same 10-unit International 95 Payhauler fleet is still turning in this excellent record of availability.

With 2,500 to 2,700 working hours clocked on each unit of the fleet, the 10 Payhaulers delivered 96.1 availability in a recent measured month. The Payhauler fleet never lost a day due to mechanical failure! Performance like this has helped advance job-completion date substantially ahead of schedule!

Southern California Edison Company credits their excellent results partly to strong-built, easy-to-maintain machines—partly to a methodical preventive maintenance program. Working view shows two Payhauler units highballing rock fill to the dam site in 1959—maintaining record high availability!

...NEW corrugated-body Payhauler models



New "95" Payhauler gains 3 tons in capacity, plus an additional 40 diesel hp.—with new corrugated body design and new 375-hp. turbocharged International DT-817 diesel engine.

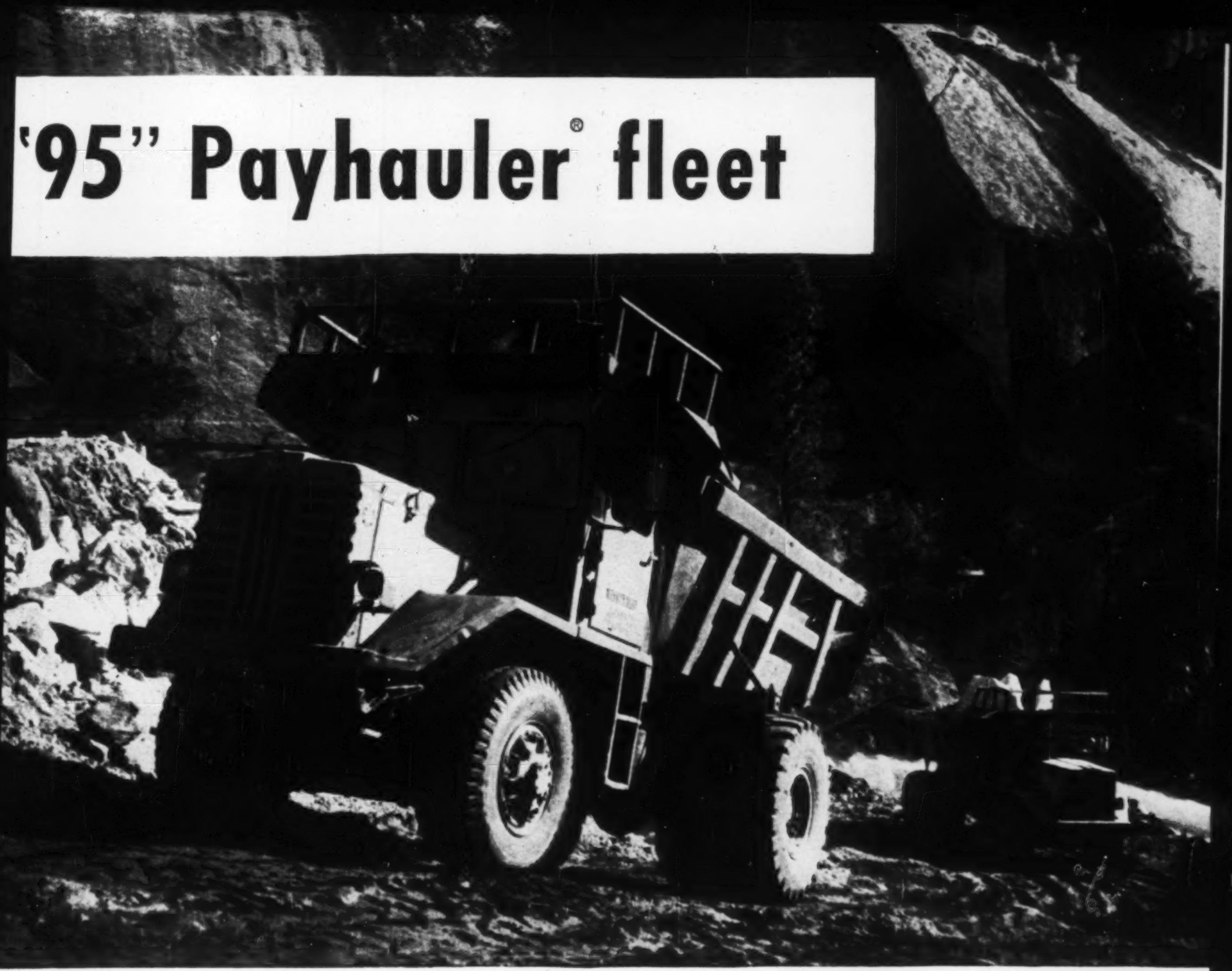
See those exclusive, rock-ribbed body corrugations! International applies this exclusive strength-multiplying principle to reduce the body-weight of new Payhauler models with these results:

- **New "95" Payhauler loses 2½ tons of power-wasting dead-weight; gives 3 extra tons of payload capacity!**
- **New "65" Payhauler sheds 5,000 pounds of useless "ballast"; gains a whole ton of new hauling capacity!**

And both these weight-streamlined Payhaulers have new International diesel power to highball the bigger payloads 14% faster than the previous models. These new Payhauler models have the power-to-weight ratio to out-cycle even lower capacity rigs.

Get the proof that new Payhauler models can deliver and keep delivering you the lowest material-moving costs in the off-highway hauling market. See your International Construction Equipment Distributor for a demonstration!

'95" Payhauler® fleet



speed bigger loads...up to 14% faster!

New "65" Payhauler, the only 19-tonner, features International's *exclusive* new corrugated body principle. Powered by the naturally aspirated new 250-hp. International D-817 diesel engine.

International® Construction Equipment

International Harvester Co.
180 N. Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Concrete Saw Has Tandem Blades

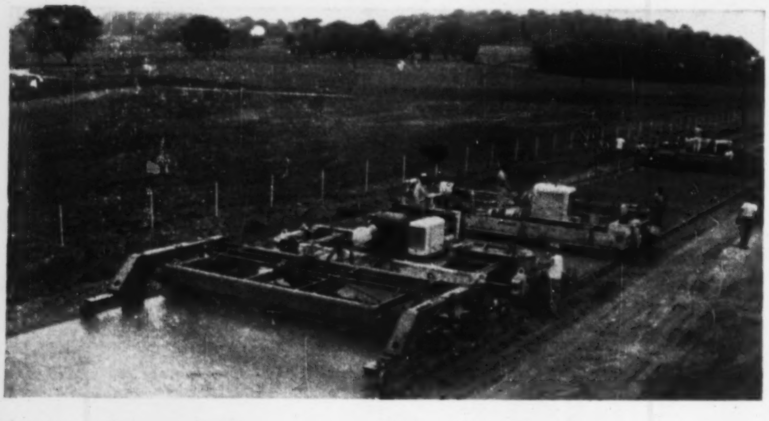
Fast, efficient and accurate sawing of longitudinal joints is claimed for the Model C-560 concrete saw.

The C-560 carries two independently controlled cutting heads positioned in tandem. Each has its own pressure equalizer spring to cushion blade shock and increase blade life.

Blades are centered between the drive wheels. Forward and reverse speeds of 35 ft per min are possible.

A direct reading gage continuously measures and indicates depth of cut.

The saw is powered by a 56-hp gasoline engine. Propane fired engines available upon request. Clipper Mfg. Co., Suite 156, 2800 Warwick, Kansas City 8, Mo.



Finisher-Floater Saves Labor

The JF 20-26-ft transverse finisher-floater puts a final machine finish to concrete pavements as it is towed and operated from any finishing machine, the maker states. No separate operator is needed.

The machine has an oscillating screed and transverse float. Screed and float pan are suspended between bogie axles, providing a 4-to-1 ratio of correction.

The suspended screed and float are independent of the forms. This produces a surface that is extremely accurate and usually ready for burlap drag, the manufacturer says.

Both screed and float pan are quick-crown-change type. The screed has 4-in. oscillation at speeds of 48, 76 and 130 strokes per min. Screed drive, lifting and lowering are hydraulically operated.

A telescopic tubular frame is designed for quick 20-to-26-ft adjustability. A metering screed and float pan, 20-ft-wide, is standard; 12-, 24-, 30- and 36-in. screed and float extensions are available.

The finisher-float is detached from the finisher by removing a pin and disconnecting hydraulic couplings. Jaeger Machine Co., Columbus 16, Ohio.

Differential Pile Hammer Strikes 4,000 ft-lb Blow

A lightweight, differential steam-air pile hammer is being produced by the Vulcan Iron Works. Known as the Model DGH 900, the machine has a rated energy of 4,000 ft-lb at a speed of 236 blows per minute.

The hammer will work well with a 40-hp boiler or an equivalent compressor. Its working pressure with either air or steam is 78 psi.

The DGH 900 has a total weight of only 2½ tons and can therefore be handled at normal reaches even by a small crane. Its height of 81 in. permits a maximum pile length even for short-boomed machines.

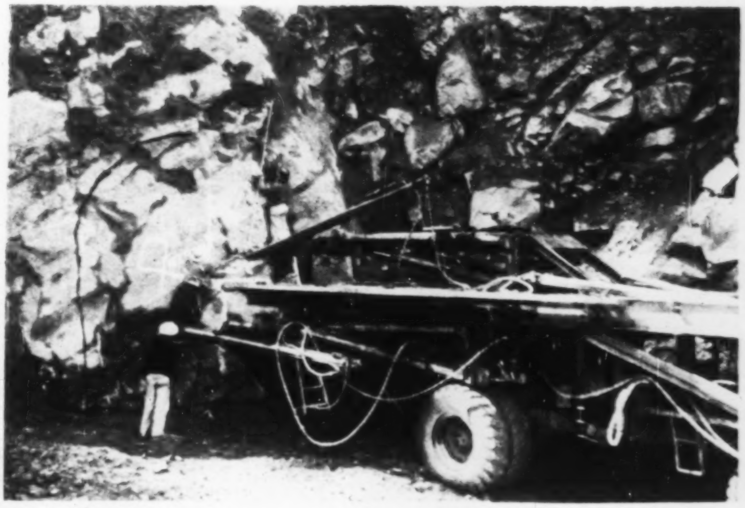
Having only four moving parts, the DGH 900 is reportedly easy to lubricate and maintain. According to its manufacturer it can be disassembled in less than one hour. It can be adapted to fit any standard width leader or it can be used without leads as a free hammer. Vulcan Iron Works, Inc. 327 N. Bell Avenue, Chicago 12, Ill.

Pump for Water-Wagon Is Submerged in Tank

The Water-Cator is a powered water-wagon for applying compaction water in highway and street construction. It is a self-contained unit that will fit any make of truck of sufficient power.

The water-wagon has a hydraulically driven pump submerged in the tank. The wagon can be fitted with two or four adjustable spray heads. Water flow is controlled from the truck cab.

Model 300 has a 3,000 gal capacity; the 580 can handle 5,800 gal. Koehring Co. of California, 2200 Country Club Blvd., Stockton 4, Calif.



CONSTRUCTION DAILY

". . . useful in keeping up with the work under progress."

FRAZIER-DAVIS CONSTRUCTION CO.

Jaybird Tunnel, a $5,500,000 job for the Sacramento Municipal District at Placerville, California, is typical of the challenging and varied work undertaken by the Frazier-Davis Construction Co.

Other recent Frazier-Davis jobs have been in Arizona, New York, Pennsylvania, and Ohio. In addition to tunnels, projects have ranged from power plants to warehouses.

Speaking of the importance of CONSTRUCTION DAILY to his firm, Vice President Roy J. Gunther says:

"All men in the supervisory capacity of our company find the CONSTRUCTION DAILY useful in keeping up with the work under progress as well as new work throughout the country.

"The prices . . . are important in that they show the trend of work and indicate where business is busiest. This is useful to us because it forecasts future work."

CONSTRUCTION DAILY is exactly what it says; a daily report of construction activity. It comes to you in two sections—the Daily Newsletter and Construction Reports. Newly announced bid dates, proposed new work projects, price information, hot news from Washington and elsewhere are all subjects of the Newsletter.

The Reports section includes bids asked, low bids and contract awards that top $80,000,000 worth of business a day! It's the fastest, most complete system of reports on building and construction that yield the most business per project in the nation.

Facts you need on every kind of construction arrive daily. They are rushed to you by a large editorial-and-research staff backed by 143 reporters located strategically at all important construction centers around the world. In every case, you get a head start on local, regional, national, even international projects.

* * * *

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About Frazier-Davis . . .

Founded in 1916 by A. W. Frazier and E. C. Davis, this highly respected firm benefited from the start by the conservatism of the former and the venturous instincts of the latter working in combination.

Now in its 43rd year of continuous operation, this company has earned a commendable reputation in the field of heavy construction both through its successful undertaking of hazardous jobs and a refusal to over-expand; thereby keeping operational control in the hands of a knowledgeable and experienced staff.

During Frazier-Davis' early years, its jobs were composed primarily of sewers, railroad work, highways, bridges, etc. For many years, however, its activities have encompassed virtually every type of heavy construction.

The home office of Frazier-Davis Construction Co. is at 1319 Macklind Ave., St. Louis 10, Mo.

Construction Daily
A McGRAW-HILL PUBLICATION

Dept. EN-R 105

330 West 42 Street, New York 36, N. Y.

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready mixed Concrete, Asphalt: Last, June 4: Next July 9.
- Iron and Steel Products, pipe: Last, June 11: Next July 16.
- Wood Products, Glass, Explosives, Chemicals: Last, June 18: Next July 23.
- Clay Products, Lime, Plaster, Paint, Rrofing: Last, June 25: Next, July 30.

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor		Truck drivers		
								Building	Heavy Const	1½ T	under 4 cy	over 4 cy
Atlanta	$3.75	$3.10	$3.30+7½c	$3.225	$3.25	$3.50+10c	$3.35+20c	$1.75	$1.75	$1.75	$1.85	$2.10
Baltimore	4.10+10c	3.30+7½cf	3.90+7½c	3.80 3.95+10c	3.60+7½c	3.42½+7½c	3.30+7½c	2.20+7½c	2.20+7½c	2.10+7½c	2.10+7½c	2.20+7½c
Birmingham	3.85	2.95	3.35+10c	2.77	3.17	3.425	3.47+10c	1.75	1.85	1.83	2.02	2.35
Boston	3.80+30c	3.45+10c	3.90+20c	3.77½+10c	3.65+35c	3.75+25c	3.20+10c	2.65+10c	2.55+10c	2.45	2.45	2.65
Chicago	4.07½+7½c	3.75+20co	4.15+16cn	3.55+5c	3.95+23c	4.10	3.95+23c	3.02½+7½c	3.02½+7½c	2.46+15c		......
Cincinnati	3.88+12c	3.57½	3.65+10c	3.375 3.60	3.725	3.92+4c	3.80+9½c	2.75	2.65	2.45+2¼c	2.55+2¼c	2.65+2¼c
Cleveland	3.965+10cb	3.99b	3.89+10cb	3.89+10cb	3.89a	4.05b	3.80+19cb	3.25b	3.165b	2.82+15ca	2.82+15ca	2.82+15ca
Dallas	3.95	3.25b	3.425+7½c	3.375	3.625+13c	3.425+7½c	3.45+8½c	1.70	1.70	1.70 2.625	1.70 2.625	0.70 2.625
Denver	3.90	3.34	3.41+7½c	3.15	3.625+12c	3.75+14c	3.80+10c	2.25	2.25	2.30	2.50	2.65
Detroit	3.90+30c	3.55+42c	3.90+22½c	3.55+36c	3.66+34c	3.80+35½c	3.835+17½c	2.80+42c	2.80+42c	2.95	2.95	2.95
Kansas City	3.95	3.50	3.55	3.445	3.75	3.60+28c	3.60+9½c	2.455	2.505	2.43	2.43	2.505
Los Angeles	4.00+15c	3.60+20c	3.85+20½c	3.41+10c	4.00+30c	4.15+4c	3.90+49c	2.88+10c	2.88+10c	2.93+10c	2.93+10c	3.12+10c
Minneapolis	3.875	3.45	3.62	3.45	3.40+33c	3.55+39c	3.57	2.70	2.70	2.70	2.70d	2.85
New Orleans	3.575+5cd	3.10d	3.40+7½cd	3.225+7½c	3.12+5c	3.475+7½c	3.50+15c	1.80c	1.80c	2.575+7½c	2.575+7½c	2.575+7½c
New York	4.80+44c	4.40+35ck	4.60+47cj	4.65+37c	4.35+52c	4.18+1.32	4.50+50c	3.30+26cc	3.30+26cc	2.35+22½c	3.15+23½c	3.15+23½c
Philadelphia	4.10+17c	3.785	4.175+23c	2.595 4.23+10c	4.15+15c	4.07½+16c	4.10+16½c	2.80	2.50		2.57+15½c	
Pittsburgh	4.30+20c	3.775+20c	4.00+20c	3.73+20c	3.95+20c	4.35+32½c	4.00+20c	2.575+20c	2.425+20c	2.37+20c	2.51+20c	2.61+20c
St. Louis	4.05+32¼c	3.725+10cc	3.75+7½c	3.825	3.80+7½c	3.95½+29.8c	3.92½+27½c	2.775+10c	2.775+10c	2.80+12½c	2.80+12½c	2.80+12½c
San Francisco	4.10+42½c	3.505+32½c	3.85+20c	3.405+10c	3.74+52½c	3.91+34½c	3.70+46c	2.685+10c	2.685+10c	2.81+10c	2.75+10	2.89+10c
Seattle	3.90+10c	3.32+10c	3.59+10c	3.59+20c	3.57+30c	3.65+26c	3.81+24c	2.85+10c	2.85+10c	3.15+20c	3.15+20c	3.35+20c
Montreal	2.35+5c	2.15+5c	2.45+5cR	2.25+5c	2.35+5c	2.35+5c	2.47+5c	1.55+4c	1.55+4c	1.55+4c	1.55+4c	1.55+4c
Toronto	3.00+12c	2.80+12c	2.85+11c	3.05+12c	2.80+19c	3.30+13c	3.20+13c	1.80+7c	1.80+7c	1.85+7c	1.85+7c	1.85+7c

	Tractor Operators Incl. bulldozers			Tractor scraper 15-16 cy	Power cranes & shovels		Motor grader oper	Air comp oper	Air tool oper
	34-49 hp	70-100 hp	100 & over		½ cy	¾ cy			
Atlanta	$2.75	$2.90	$2.90	$2.75	$3.275	$3.425	$2.75	$2.675	$1.87
Baltimore	3.40 3.55+10c	3.40 3.55+10c	3.40 3.55+10c	3.40 3.55+10c	3.80 3.95+10c	3.80 3.95+10c	3.40 3.55+10c	2.85 3.00+10c	2.25+7½c
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.52	1.90
Boston	3.40+10c	3.40+10c	3.40+10c	3.40+10c	3.775+10c	3.775+10c	3.40+10c	3.325+10c	2.60+7c
Chicago	3.30+5c	3.45+5c	3.30+5c	3.30+5c	3.90+5c	3.90+5c	3.50+5c	3.40+5c	3.55+5c
Cincinnati	3.375	3.375	3.375	3.375	3.375	3.60	3.60	3.60	3.60
Cleveland	3.74b	3.74b	3.74b	3.74b	3.99b	3.99b	3.74b	3.615b	3.615b
Dallas	1.70 2.625	1.70 2.625	1.70 2.625	1.70 2.625	3.10h	3.10h	1.70 2.625	1.85	1.85
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	2.53R
Detroit	3.55+36c	3.55+36c	3.55+36c	3.55+36c	3.55+36c	3.55+36c	3.55+36c	3.34+36c	2.93+34c
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15c	3.91+15c	3.91+15c	4.01+15c	4.01+15c	4.01+15c	4.01+15c	3.13+15c	3.09+10c
Minneapolis	3.08	3.30		3.30	3.52	3.78	3.08	2.97R	2.85
New Orleans	3.225+7½cd	3.225+7½cd	3.225+7½cd	3.225+7½c	3.225+7½cd	3.225+7½cd	3.225+7½c	2.575+7½c	1.90
New York	4.025+32c	4.025+32c	4.025+32c	4.15+33c	4.90+39c	4.90+39ck	4.15+33c	4.15+33c	4.15+21c
Philadelphia	2.595 4.23+10c			2.595 4.23+10c	2.595 4.23+10c		2.595 4.23+10c	2.595 4.23+10c	2.35
Pittsburgh	3.44+10c	3.44+10c	3.44+10c	3.44+10c	3.64+10c	3.64+10c	3.64+10c	3.15+10c	2.30+20c
St. Louis	3.825	3.825	3.825	3.825	3.825	3.825	3.825	3.275	3.275
San Francisco	3.70+10c	3.70+10c	3.70+10c	3.70+10c	3.85+10c	3.85+10c	3.75+10c	3.10+10c	2.955+10c
Seattle	3.56+20c	3.56+20c	3.56+20c	3.56+20c	3.93+20c	3.93+20c	3.65+20c	3.29+20c	3.05+10c
Montreal	1.75+4c	1.98+4c	1.98+4c	1.98+4c	2.25+5c	2.25+5c	1.98+4c	1.85+4c	1.85+4c
Toronto	2.30+10c	2.40+10c	2.40+10c	2.40+10c	2.90+12c	3.05+12c	2.70+11c	2.40+10c	2.40+10c

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.840, ENR Common Average $2.549

Description of fringe benefits last appeared Feb. 26; will next appear in Dec. Cost Issue.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a Apr. 1; 10c b Apr. 1; 12c. 1959: c Dec. 1; 10c d Nov. 1; 10c e Nov. 1; 5c f Oct. 1; 20c g Sept. 1: 11c h Aug. 1; 7½c

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft		GYPSUM BOARD LATH plain or perf per Msq ft	GYPSUM SHEATHING tongue & groove per Msq ft	FIBER BOARD SHEATHING asph impreg & coat per Msq ft		FIBER BOARD INSULATION sq edge, paint per Msq ft	MINERAL WOOL INSULATION		GLASS FIBER INSULATION		ALUMINUM FOIL	
	½"	⅜"	⅜" x 16" x 48"	½" x 2' x 8'	½" sq ed	25/32" T&G	½"	loose, per 40-lb bag a	3" batts per M sf	loose, per 40-lb bag a	3" batts per M sf	60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65 00F	$55 00F	$42 00F	$65 00F	$68 00F	$127 00F	$70 00F	1 59z	$70 00F	$2 00	$80 00F	......	......
Baltimore	51 70	45 55	34 25	55 35	65 00	108 50	69 00	1 30	66 50	1 50	45 00	$4 00	$33 50
Birmingham	68 90H	57 00H	47 77H	75 00H	67 50H	140 50H	83 50H	1 40	70.00	1 60	75 00	3 77gG	......
Boston	60 00m	50 00m	36 00m	60 00m	65 00	120 00	79 00hn	1 45b	75 00	.....	75 00	5 30	53 50q
Chicago	67 00	54 00	45 00	62 00	87 00	123 00	87 00	1 85	80 00	.....	63 65l	5 25g	......
Cincinnati	48 00wH	42 85wH	32 05wH	51 16wH	71 00wH	125 00wH	72 50wH	1 20wH	62 50wH	1 20wH	74 00wH	3 28jwJ	50 00wJ
Cleveland	62 00CF	56 50CF	41 50CF	65 00CF	80 00CF	129 00CF	80 00CF	1 35 1 50H	72 00H		63 75R	17 50wJ	55 00J
Dallas	55 00	52 50	42 50	60 00	68 75	118 00	68 75	2 00	65 69	1 45	70 67	5 00gA	45 00
Denver	66 00H	58 50H	45 00H	66 00H	79 90H	130 00H	78 90	1 50b	65 00ub	1 75b	65 00a	5 25	48 65
Detroit	66 00K	56 00K	42 45K	66 00K	60 50DK	100 50DK	60 50DK	1 30b	50 00	1 95b	88 00		......
Kansas City	65 00H	55 00H	40 00H		72 00H	115 00H	75 00H	1 40H	75 00H	2 00H	75 00H	3 60d	63 00
Los Angeles	66 00FR	60 50F	0 33xF	64 50F	75 00F	125 00F	80 00F	76 00BcF	83 00F	1 35s	64 00	4 40g	......
Minneapolis F	75 00F	65 00F	0 41xL	80 00F	78 00F	150 00F	78 00F	2 25yF	83 00F	2 10F	83 00F	5 50F	
Montreal	56 00M	47 30M	36 39M	53 00M	63 25M		63 00M	1 50M	66 00M	1 50M	66 00M	9 00qM	56 00M
New Orleans	60 00H	52 00H	45 00H	60 00H	67 00H	140 00H	80 00H	2 00	70 00*		......		......
New York	55 25	47 25	36 25	54 25	75 00	120 00	75 00	1 55b	68 50		68 50	4 38i	54 50e
Philadelphia	55 60N	50 55N	36 40N	52 57N	73 00N	110 00N	65 00N		60 70N		70 75N	5 60 6 34N	40 50N
Pittsburgh	74 00K	65 00K	40 00K	63 00K	62 50K	102 50K	57 50K	1 05sK	55 00K	1 05sK	55 00K	3 80tqK	38 50K
St. Louis	65 00HO	55 00HO	40 00HO	70 00HO	76 00HO	120 00HO	80 00HO	2 25yHO	83 00HO	2 09PHO	74 00HO	4 50tqHO	
San Francisco	57 00F	48 00F	0 35xF	58 00F	68 00F	109 00F	67 00F	1 75F	66 50F	1 75F	66 50F	5 16	60 00F
Seattle	68 30K	57 65K	51 05K	65 00K	74 50K	125 00K	73 50K	1 15tK	58 00K	1 90*pK	50 50*lKh	4 25K	46 50EK
Toronto	58 00	50.00	38 00L	64 50	75 00		75 00	1 65	65 50		65 50	16 00o	46 00

•* F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 12" to 24" width. •d 40# kraft paper, 5 Msf, 100 500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •r Per cwt. •s 35# bag. •t 26# bag •u Flame proof $75. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Spun rock wool. •A 650 sf. •B ton. •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F less 2% disc, 10th. •G ½ of 1%, 10 days •H 2% disc, 10 days. •J 1% disc, 10 days. •K less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags.

MEXICO CITY WAGES & PRICES

WAGES, av per hr, 8 hr day		June '59	May '59
Common labor,	building (peons)	1 57	1 57
	heavy const (peons)	2 00	2 00
Skilled labor,	carpenters 1 cl	3 25	3 25
	bricklayers 1 cl	2 87	2 87
	struct. ironworkers	4 38	4 38

MATERIALS PRICES, F.o.b. City	June '59	May '59
Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4" per metric ton	2100	2100
Reinf. steel, corrugated rods, per ton		
⅜"-½" x 11 meters	2000	2000
¾"-1" x 11 meters	2000	2000

Gravel, truckload at 3½ cu meters	June '59	May '59
Blue gravel	96 00	96 00
Rose gravel	90 00	90 00
Cement, std port. (Tolteca)	240 00	240 00
Lumber, ¾" pine per M ft.	1900 00	1900 00
1½" pine per M ft.	1900 00	1900 00

Unit Prices

Concrete Deck Alternate Takes Michigan Job

Two alternates featured the bidding for this bridge near Mt. Clemens, Mich., to carry a section of the proposed Metropolitan Parkway extension over Red River Drain. The first, on a rolled beam bridge, produced nine bids. The second, on a 27-in. prestressed concrete deck structure, drew ten bids and got the contract.

The award at $89,307 to John Plozai, Detroit, by the Michigan State Highway Department, Lansing, was 18.8% under the engineer's estimate. Paul Nordgren is bridge construction engineer for the department.

The bridge will have two 50-ft and two 45-ft spans, for a total bridge length of 190 ft. Clear roadway width is 31 ft, 9 in., with one safety walk at 5 ft; 5½ in. and another at 2 ft, 11½ in.

The bidding on both alternates included:

Alt. A—Rolled Beam Bridge

1	Jos. Plozai, Detroit, Mich	$89,364
2	A. J. Williams Constr., Berkeley, Mich	92,253
9	Blue Water Excav, Port Huron, Mich	112,739
EE	Paul Nordgren, bridge constr. engr, Mich. State Hwy Dept., Lansing	110,000

Alt. B—27-in. Prest Conc Deck Structure

1C	Jos. Plozai, Detroit, Mich	$89,307
2	A. J. Williams Constr., Berkeley, Mich	91,497
10	K. G. Marks, Port Huron, Mich	113,310
EE	Paul Nordgren, bridge constr. Engr., Mich. State Hwy Dept., Lansing	110,000

Bids: 4-8-59 Items	Unit	Quantity	Unit Prices 1C	 2
Rolled Beam Bridge				
Sodding, cl B	sy	238	$0.65	$1.00
Cofferdams	ls	job	6,500	4,500
Excavation, uncl	cy	58	4.00	4.00
Conc piles, cast in pl furn	lf	2,744	3.25	3.30
drive	lf	2,600	2.00	2.00
cutoff	ea	52	5.00	4.00
Conc, grade A, substructure	cy	322	42.50	40.00
superstructure	cy	271	40.00	45.00
Cement	bbl	848	4.25	4.00
Steel, reinforcement	lb	70,119	0.105	0.10
structural fab & erect	lb	194,800	0.11	0.125
Shear connectors	ls	job	1,650	1,304
Joint filler, ½"	sf	101	1.00	0.40
¾"	sf	18	1.00	0.50
1"	sf	87	1.50	0.70
Joint waterproofing	sf	275	1.00	1.00
Copper	lb	213	1.50	1.50
Bri rail fab, erect & paint	lf	380	12.50	13.50
Field painting	ls	job	1,000	1,750
Drain castings	ea	12	10.00	10.00
Riprap, plain	sy	251	4.00	5.00
Porous matl, grade A	cy	1,120	1.35	1.90
Channel excavation	cy	600	0.50	1.00
27-in. Precast Conc Deck (contract)				
Bit conc wearing course	t	107	$18.00	15.00
Sodding, cl B	sy	238	0.65	1.00
Cofferdams	ls	job	6,500	4,500
Excavation, uncl	cy	57	6.00	4.00
Conc piles, cast in pl furn	lf	2,744	3.50	3.00
drive	lf	2,600	2.00	2.30
cutoff	ea	52	5.00	4.00
Conc, grade A, substructure	cy	371	40.00	40.00
superstructure	cy	61	45.00	40.00
Prestressed conc deck, 27"	sf	7,410	4.57	5.20
Position dowels	ea	208	1.00	1.00
Cement	bbl	618	4.25	4.00
Steel reinforcement	lb	21,438	0.11	0.10
Hook bolts, ½"	ea	24	1.00	1.00
Joint filler, ¼"	sf	439	1.00	0.30
¾"	sf	318	1.00	0.70
waterproofing	sf	305	1.00	1.00
Bri rail fab, erect, paint	lf	380	12.50	13.50
Riprap, plain	sy	261	4.00	5.00
orous matl, grade A	cy	1,110	1.35	1.90
hannel excavation	cy	600	0.50	1.00

Complete: 10-15-59

Highway Price Trends, Arizona

Average unit prices on selected items of materials used on highway construction projects during 1957 and 1958

Items	Unit	Avg. Unit Prices 1957a	 1958b
Clear & grub	ac	$513.80	$558.75
Excavation, roadway	cy	0.76	0.76
drainage	cy	0.80	0.51
structural	cy	3.17	1.98
Grader ditches	lf	0.102	0.087
Overhaul	cym	0.28	0.24
Borrow	cy	0.49	0.31
Water, apply	Mgal	2.12	2.04
Rolling	hr	9.25	8.89
Select material	t	0.80	0.61
Aggregate base	t	1.41	1.19
Blotter material	t	4.08	4.62
Bituminous mix, road mix	t	2.36	1.54
plant mix	t	3.51	2.76
Seal coat, plant mix	t	6.24	5.07
Asphalt, liq, prime MC 2-3	t	49.81	46.43
tack	t	84.95	84.44
paving, 200-300 penetration	t	44.16	28.72
emulsified, gr B	t	53.61	46.96
Concrete pavement	sy	5.99	4.46
Steel, structural	lb	0.325	0.207
reinforcing (bars)	lb	0.157	0.134
Aluminum handrail	lf	11.84	11.67
Concrete, cl A	cy	57.54	47.80
cl D	cy	58.42	50.00
CMP, 24"	lf	6.84	7.58
30"	lf	8.09	8.13
36"	lf	12.52	12.06
42"	lf	14.52	13.10
48"	lf	16.79	15.11
arch type, 29 x 18"	lf	7.19	6.71
36 x 22"	lf	10.73	11.14
bit ctd, 24"	lf	7.11	7.20
Concrete pipe, 12"	lf	3.31	3.09
18"	lf	4.86	5.75
reinf, 15"	lf	5.75	6.58
18"	lf	7.25	7.58
24"	lf	8.28	8.76
30"	lf	7.14	11.16

Items		Unit	Avg. Unit Prics 1957a	 1958b
RCP 36"		lf	12.53	11.70
42"		lf	14.43	15.58
Conc piles, stl shell or prcst	f&d	lf		9.50
	drive	ea		184.71
Stl H-col piles, 10" x 42#	f&d	lf	8.38	4.21
	drive	ea		74.52
Riprap, grouted, type F		cy	20.74	19.76
Cattle guards, 3 unit		ea	1,178	1,629
Road guard		lf	4.17	2.92
Guide posts, type BL & BR		ea	6.63	6.26
Line fence		lf	0.24	0.214
Steel fence gates, std C-16, #1		ea	68.56	75.15
Concrete catch basins, #3		ea	299.92	288.48
Comb curb & gutter, type A		lf	2.62	2.41
Curb, single, type E		lf	2.44	1.60
type G		lf	2.09	1.62
Valley gutter, 4"		lf	2.99	2.87
Concrete sidewalk, 4"		sf	0.48	0.39
Manhole frame & cover		ea	252.02	153.51
Bank protection, type A		lf	20.30	18.57
Curbs, mixed bituminous	place	lf	0.172	0.119
Gutters, mixed bituminous	place	lf	1.52	1.52
Irrigation ditch		lf	0.41	0.305
Chain link fence, cycl or equal		lf	1.31	1.16
Portland cement		bbl	6.82	5.66
Culvert pipe, 24"		lf	6.23	6.03
30"		lf	7.52	7.76
36"		lf	11.59	11.39
42"		lf	14.10	13.51
Cast iron sewer pipe, 8"		lf	6.79	7.11
Right of way markers, B or C		ea	9.42	9.69

a 1957 average price is simple average of bid prices

b 1958 prices are weighted average, arrived at by dividing total cost for each item by the total quantity

1955 6 prices, ENR 3-7, 57.

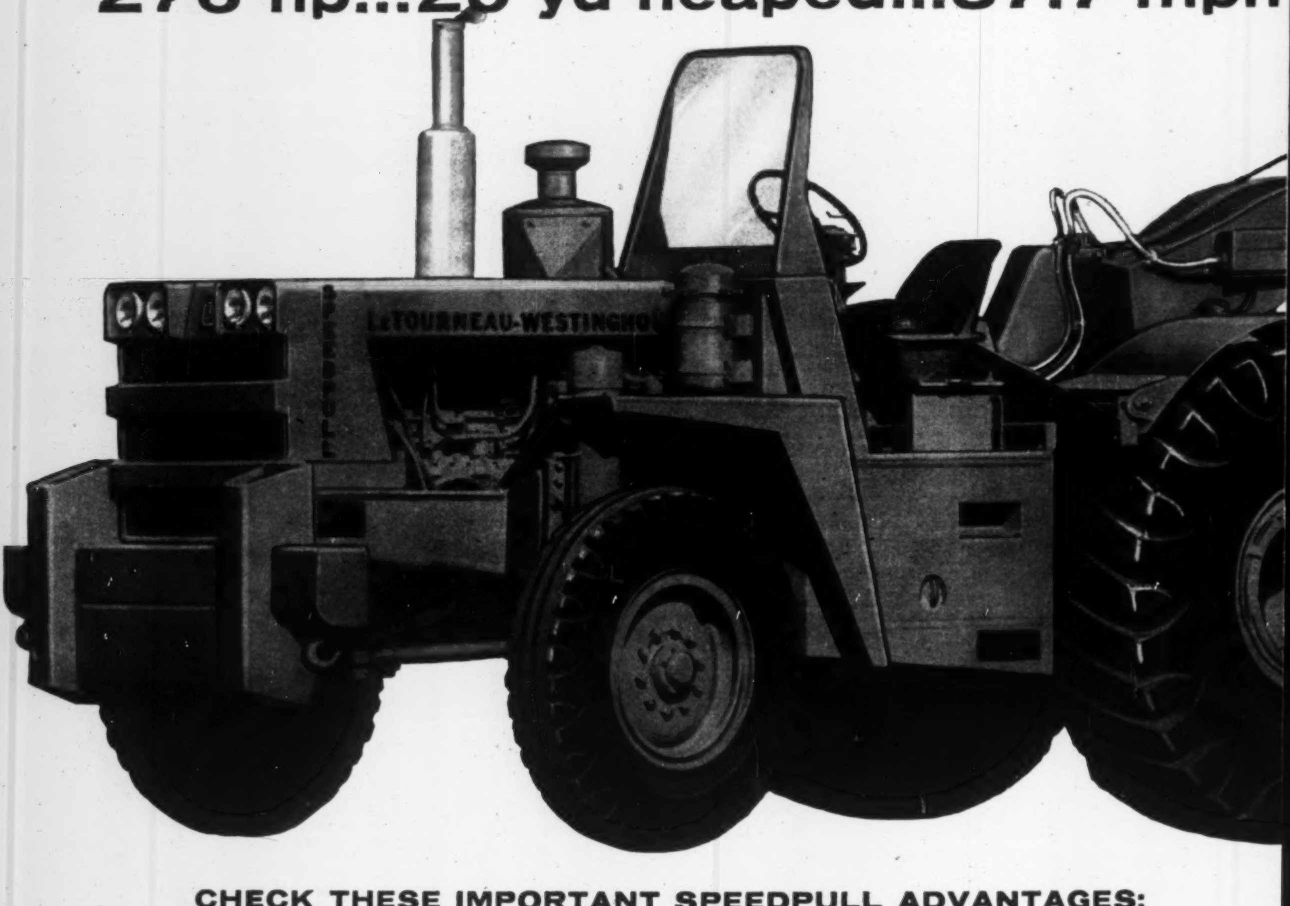
NEW
37.7 MPH
6-Wheel
SPEEDPULL*
→
NOW
270 HP
V POWER
C TOURNAPULL®
→
Announced by
LeTOURNEAU
LW
WESTINGHOUSE
... NEXT FOUR PAGES →
*Trademark CP-2160-DC-½

NEW

from LeTourneau-Westinghouse

6-WHEEL

276 hp...20 yd heaped...37.7 mph



CHECK THESE IMPORTANT SPEEDPULL ADVANTAGES:

Easy-loading Fullpak® Scraper Design: Low angle loading, with wider entry for dirt. The fastest-loading scraper of all!

***Hydrair** Suspension:** Ride on air, not steel! Higher ground clearance, no axle-dozing action. Fast, short turns!

Electric Controls: Instant-response motors control tailgate, apron, bowl lift. Easy-operating, low-cost maintenance!

Full-Power Steer: Sharpest turning-angle in the industry, with precision control. Feather-touch wheel, shockproof linkage!

Spot-Turn Brakes: Hand-lever actuates brake on either drive-wheel for immediate, sharp turns . . . to aid or replace front-wheel steer in soft going!

3,764 Sq In. Brake Surface: Biggest brakes in the industry, for SURE stops. Also available: brake-saving Electrotarder!

Power-Transfer Differential: Automatically transfers power from spinning drive-wheel to wheel on better footing!

Free-*Oscillation* Hitch: Scraper can "twist" 30° right or left of prime-mover, 27° downward, and 25° upward!

Easiest to Maintain: Strongest frame; quickest accessibility of components; and only one lube point needs daily service!

For further details on the new C Speedpull contact your LeTourneau-Westinghouse Distributor.

SPEEDPULL*

LW PARADE OF PROGRESS

New 6-Wheel Scraper Added to LW Line of Earthmovers

PEORIA—A fast, high-production, six-wheel scraper is announced by the LeTourneau-Westinghouse Company, pioneer manufacturer of rubber-tired earthmoving equipment. Named "Speedpull", the machine teams a 20-yd Fullpak scraper with a new 276-hp 4-wheel prime-mover, and offers speeds to 37.7 mph.

Designed specifically for top production on long-haul earthmoving jobs, Speedpull was given intensive on-the-job tests for 18 months before being placed on the market. Performance records on these jobs were outstanding, and the machine is expected to gain wide and immediate acceptance as a companion unit to LW's 4-wheel Tournapulls®.

Advantages of the Speedpull include revolutionary new Hydrair suspension, an exceptionally favorable power-to-weight ratio, "feather-touch" full-power steering, and new "spot-turn" brakes. In addition, the unit offers job-proven Tournapull features, including the world-famous LW power-transfer differential, electric control of scraper, and easy-loading Fullpak design.

Many advantages with Hydrair

Most *unusual* feature of Speedpull is Hydrair suspension, which mounts Speedpull's front wheels to pistons, to serve as giant shock absorbers. The machine rides on air, and no front axle is necessary. This makes for higher ground clearance and eliminates troublesome axle "dozing" action. The no-axle feature permits shorter turns. Coupled with Speedpull's full-power steer, Hydrair permits the 41′2″ machine to turn 180° in a space only 34′ wide.

New "spot-turn" brakes are standard equipment. This steer-system permits braking of either drive-wheel for fast skid-steer action, to supplement normal front-wheel steer in soft going. Braking surface on the Speedpull totals 3,764 square inches, largest in the industry. Auxiliary braking is available with the Electrotarder.

Maintenance costs of Speedpull will be unusually low. The frame is the strongest in the industry, with extensive use of new high-tensile-strength steels. There are only nine grease fittings on the prime-mover. Only one needs daily attention, and the other eight need service only once every 100 hours. And most major Speedpull components can be removed without disturbing other assemblies.

Power-plant for Speedpull is a Cummins diesel, rated at 276 horsepower. With only 336 pounds of total loaded weight per horsepower, the machine outstrips competitive machines in power-to-weight ratio. The 5-speed step-gear transmission is coupled to a two-speed transfer case, offering a total of 10 forward speeds and two reverse. The Speedpull has a large 16″ double-plate clutch.

Complete specifications and performance data on Speedpulls are available at LW Distributors.

Note: Same easy-loading Fullpak scraper is used on V-Power C Tournapull announced on next page.

*Trademark CSP-2144-DC-2

LW LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

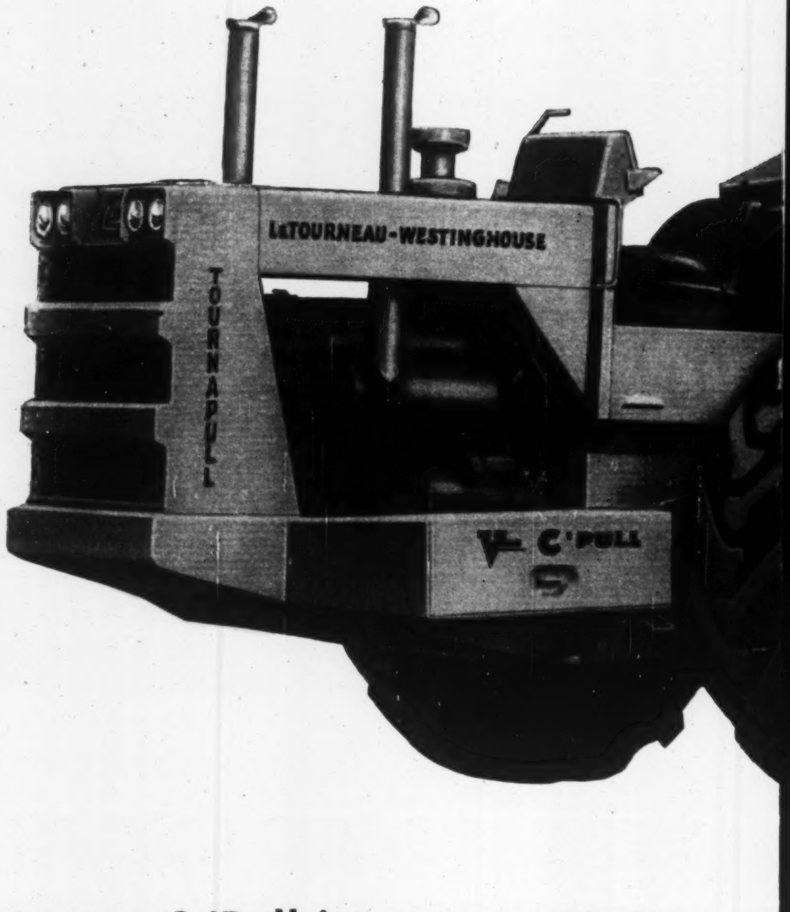
Where quality is a habit

NOW V POWER

V POWER

. . . for maximum efficiency in dirtmoving

C Tournapull . . . "Standard of the Industry" . . . is now available with the new GM 8V-71 engine . . . 270 horses of dynamic earthmoving power! Coupled with the "C's" simple, low-dead-weight construction, you get *the best horsepower-to-weight ratio of any scraper in its class!* The world's best medium-sized scraper now gives you extra power to lick the toughest loading condition, to provide quick acceleration, and assure top-speed hauling. Another big new feature of the V-powered C 'Pull* is a cost-saving "drop-out" transmission which can be removed easily without disturbing any other component.



Profit from these recent C 'Pull improvements:

Improved steering . . . new pressure-lubricated transmission . . . better brakes . . . new high-temperature insulation on all motors . . . larger diameter apron drum . . . adjustable side-thrust roller on tailgate . . . transmission oil-pressure gauge . . . new shock-mounted headlights . . . stronger bottom plate . . . better runner-rail reinforcement . . . new axle and inboard axle bearings . . . new converter tank filter . . . new, larger hoses.

PLUS all these job-proven Tournapull money-makers:

FULLPAK® scraper design: lower, wider, for better boil, fewer voids, bigger payloads . . . POWER-TRANSFER DIFFERENTIAL: lets 'Pulls operate in soft going that stops other scrapers . . . ELECTRIC CONTROLS: instant-response, pinpoint-accuracy control, easy-to-operate, easy-to-maintain . . . BIGGEST BRAKES IN THE INDUSTRY: 3,764 square inches of brake surface . . . MORE MANEUVERABILITY: with kingpin steer . . . INTERCHANGEABILITY: switch trail-units behind prime-mover at low cost.

C TOURNAPULL®

270 HP

14 yd (struck) 20 yd (heaped)

High horsepower, low dead-weight
Best power-to-weight ratio in its class!

LW
LeTOURNEAU-WESTINGHOUSE

LW PARADE OF PROGRESS

This new V-power C Tournapull and the six-wheel Speedpull* announced on the previous pages are two more additions to an impressive array of new LeTourneau-Westinghouse earthmoving machines. They're part of LW's continuing program of product development to give you highest-production equipment at lowest ownership-operating cost.

Get in step! Your LeTourneau-Westinghouse Distributor has the answers to your questions about these new profit-builders. See him soon!

*Trademark CP-2154-DC-2

LW **LeTOURNEAU-WESTINGHOUSE COMPANY,** PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **Vt., Winooski**—MISSILE FACILITY—BA 6/30—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Missile Facility FY-59, Ethan Allen Air Force Base, consisting of following (1) twenty-eight 60 ft. x 22 ft. launch shelters (2) assembly and maintenance bldg. (3) 162 ft. x 162 ft. composite bldg. (4) 9 ft. x 13 ft. 6 in. latrine bldg. (5) 18 ft. x 41 ft. ordnance storage bldg. (6) 9 ft. 5 in. x 7 ft. 5 in. traffic check house (7) security control and fire station, incl. fence, security and lighting electrical distr. sys., communication sys., medium temperature hotex water distr. sys., low pressure air sys., sanitary sewerage sys., water distr sys. and elevated storage tank, storm drainage sys., grading, excavation, embankment and preparation of subgrade, flex. and rigid pavements, topsoiling and seeding and mulching, ENG-19-016-59-134. $3,500,000-$4,000,000. Plans deposit $50. Extended date. Fay, Spofford & Thorndike, Inc., 11 Beacon St., Boston, Mass., engrs. CD 5/25.

BUILDINGS—BA

▲ **Conn., Storrs**—DORMITORIES—BA 7/15—State P. Wks. Comrs., 165 Capitol Ave., Hartford, North Dormitories, University of Connecticut, Proj. BI-D-211-A. $1,200,000. Extended date. CD 6/12.

Mass., Bedford—SCHOOL—BA 7/30—Town, high school addn. $730,000. Clinch, Crimp, Brown & Fisher, 177 State St., Boston, Mass., archts. Cleverdon, Varney & Pike, 120 Tremont St., Boston, Mass., structural engrs. CD 4/3.

Mass., Ware—SCHOOL—BA 8/20—St. Mary's R. C. Church, c/o Chancery Office, 68 Eliot St., Springfield, Mass. (selected list of bidders), elementary school, South St. $400,000. Munson, Mallis, Bradley, Patterson & Burgener, 6 Frost St., Springfield, Mass., archts.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., Augusta,
Frank Rossi, R.F.D. 5-A, Gardiner, Me., CA **$1,744,658** (3 bidders), grading, drainage, base project, bridge, U.S. Rte. 201, 3.116 mi., City of Waterville and Town of Fairfield, FAP No. I-95-6(21)124, Kennebec and Somerset Counties. Bids June 17. CD 6/3.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Campanella & Cardi Constr. Co., 780 Jeffersoon Blvd., Warwick, R. I., CA **$4,935,546**, Interstate hy. W95, 8 bridges. FA 1-W95-6(1)58 Contr. B, Chelmsford and Lowell. Bids May 12, awarded June 15. CD 5/14, under LB.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Central Constr. Co. and **Henley Lundgren Co.**, 193 Hartford Pike, Shrewsbury, Mass. (joint venture) CA **$1,685,911**, Interstate Rte. 91. FAP 1-91-1-16127, Hatfield and Whately. Bids May 26, awarded June 15. CD 5/28, under LB.

▲ **R. Zoppo Co.**, 842 Providence Highway, Norwood, Mass., LB **$2,756,158**, Contr. 273, constr. Deer Island Sewage Treatment Plant, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids June 18. CD 6/1.

▲† **Gil Wyner Co., Inc.**, 12 Newland St., Malden, Mass., CA **$1,095,844**, est. $1,500,000, extension runway 8-26 and taxiway, U. S. Naval Air Station, South Weymouth, NBy 23011, Spec. 23011/59, WEYMOUTH, MASS. Dist. P. Wks. Office, 495 Summer St., Boston 10, Mass. Bids June 4. CD 6/8, under LB.

▲ **CONNECTICUT**—State Hy. Comrs., 170 Douglas St., Hartford,
Peter Mitchell Inc., 315 Greenwich Ave., Greenwich, Conn., CA **$1,077,000** hot bit. conc. 23,375 lin. ft. Litchfield Rd. Rte. 116 incld. rolled beam bridge over Spruce Brook and 3-span rolled beam bridge over New York, New Haven and Hartford Railroad, Proj. 73-87. Bids May 18. CD 5/20, under LB.

BUILDINGS—LB & CA

▲ **Consolidated Constructors**, Inc., 21 East 40th St., New York City, N. Y., CA **$1,786,945**, est. $2,000,000, HOSPITAL addn., Proj. Vt. 19, BURLINGTON, VT. Mary Fletcher Hospital, Burlington, Vt. Bids June 11. CD 6/16, under LB.

▲ **Immick Lumber Co.**, State St. Ext., Meriden, Conn., Owner Builds, **$3,500,000**, 200 HOUSES "Belleview Acres", Miller Ave., CHESHIRE and MERIDEN, CONN.

▲ **Perini Corp.**, 73 Montwaite Ave., Framingham, Mass., CA **$1,600,000**. SCIENCE, LIBRARY, student activity bldg. and gymnasium, Goffstown, MANCHESTER, N. H. St. Anselm's College, College Rd., Manchester, N. H. Bids June 11. CD 5/15.

▲ **John F. Griffin Co.**, 34 Recent St., Cambridge, Mass., CA **$1,200,000**, 7 story APARTMENT HOUSE, CAMBRIDGE, MASS. Continental Terrace Corp., 111 29 Garden St., Cambridge, Mass. Bids June 8. CD 6/9.

▲ **Park Constr. Co., Inc.**, 40 Court St., Boston, Mass., CA **$1,313,000**, est. $1,300,000, JUNIOR-SENIOR HIGH SCHOOL, MILLIS, MASS. Town, Junior-Senior High School Bldg. Comn., high school bldg., Millis, Mass. Barnes & Jarnis Inc., 261 Franklin St., Boston, Mass., engr. Bids June 10, awarded June 15. CD 6/16, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., Rochester**—BA 7/16—Monroe County Sewer Agency, 406 Terminal Bldg., 65 Broad St., Rochester, Section D-25 mi. 8 to 24 in. sanitary sewers for Gates-Chili-Ogden Sewer District. LB $2,070,822. Bids Apr. 16 rejected. CD 5/5, under LB.

N. Y., Idlewild—FOUNDATIONS, PIPING, etc.—BA 7/21—Port of New York Authority, 111 8th Ave., New York, Zone 11, fdns., piping for ten fuel tanks at New York International Airport. Contr. NYA-120.007. Plans deposit $30. CD 9/20/57.

BUILDINGS—BA

N. Y., New York—BOYS' CLUB—BA 6/30—Children's Aid Society, 105 E. 22nd St., Zone 10, 3 story Rhinelander Boys' Club, First Ave. and East 88th St. $750,000. Gibbons & Heidtmann, 55 Church St., White Plains, N. Y., archts. CD 3/7/58.

▲ **N. Y., Rego Park**—SCHOOL—BA 7/16—Bd. Educ., Bureau of Constr., 42-15 Crescent St., Long Island City Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures modernization and addn., P.S. 139, Wetherole St. and 63rd Dr., Queens Boro. $1,235,094. Plans deposit $25. for general, $10. each, plumbing and drainage and electrical work and lighting fixtures, $8 heating and ventilating. CD 3/31/58.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲† **Md. Bethesda**—OFFICE—BA 7/30—General Services Admin., P. Bldgs. Service, 19th and F Sts. N.W., Wash. 25, D. C., 12 story and 6 story, full bsmnt. connected with 2 story structure, full bsmnt., 220,800 sq. ft. caissons, rein.-con. frame, cast stone trim, masonry, etc. office (except elevator plant and escalator), National Institutes of Health. Proj. No. 18088, Contr. No. GS-R3-B 6452. Plans deposit $100. CD 3/26/57.

▲† **D. C., Wash.**—MUSEUM—BA 8/4—General Services Admin., Regional Office Bldg., 7 and D Sts., S.W. Museum of History and Technology, Smithsonian Institution (except elevator plant and escalator plant) Plans deposit $200. Total cost $36,000,000. McKim, Mead & White, 101 Park Ave., New York, N. Y. archt. Adv. ENR. 7/2. CD 10/26/45.

▲ **N. Y., New York**—HOUSING—BA 8/11—New York City Housing Auth., 299 Broadway, New York Zone 7, (1) foundations and general constr. (2) heating and ventilating (3) electrical work (4) plumbing (A) Martin Van Buren Houses (Proj. No. NYC-30) Trinity Ave., E. 161 St., E. 163 St., E. 161 St. and to Trinity Ave.; (B) Forest South Houses (Proj. No. NY 5-31) Tinton Ave., E. 161 St., E. 163 St. and E. 161 St. and to Tinton Ave.; (C) for combination of both Projects NYC-30 and NY-5-31, Bronx Boro. Plans deposit $75. Extended date. CD 6/11.

HEAVY CONSTRUCTION—LB & CA

▲ **Hendrickson Bros., Inc.**, 63 No. Central Ave., Valley Stream, N. Y., LB **$2,172,445** (3 bidders), Contr. 1002-2-IPO-3, lateral sewers, Oceanside and vicinity Town of Hempstead, Sewage Collection District No. 2-IPO, MINEOLA, N. Y. County Executive Nassau County, Old County Court House, Mineola, N.Y. Bids June 23. CD 6/1.

▲ **Perini Corp.**, 73 Montwait Ave., Framingham, Mass., LB **$3,693,000**, general contract, Midtown UNDERGROUND GARAGE, ROCHESTER, N. Y. Purchasing Agent, Rm. 36, City Hall, No. 20 South Fitzhugh St., Rochester 14, N. Y. Bids June 22. CD 6/2.
A. Burgart Inc., 2705 W. Henrietta St., Rochester, N. Y., LB $225,372, heating and ventilating for Midtown Underground Garage (Rochester, N. Y.).
Grinnell Corp., 1673 Clinton Ave. N., Rochester, N. Y., LB **$138,300**, sprinkler for Midtown Underground Garage (Rochester, N. Y.).
Horacek-Hayden, Inc., 250 Mt. Hope, Rochester, N. Y., LB **$296,676**, electrical work for Midtown Underground Garage (Rochester, N. Y.).
H. P. Lenhard & Sons, Inc., 1940 Lyell Ave., Rochester, N. Y., LB **$156,593**, plumbing for Midtown Underground Garage (Rochester, N. Y.).

▲† **F. D. Rich Co.**, 550 Summer, Stamford, Conn., LB **$3,122,600**, Base Bid (17 bidders), (first increment) NARTU hangar, central heating plant, deluge pumping station, Towers Field. ENG-49-08-59-62(59), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N W., Wash., D. C. Bids June 18. CD 6/1.

▲ **Malan Constr. Co.**, 2 Park Ave., New York, N. Y., CA **$2,787,000**, Contr. 2311-W, Potomac River water supply development, Watts Branch incl. constr., filtering unit, flocculation and sedimentation basin, head house and pertinent structures, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids June 17. CD 6/19, under LB.

BUILDINGS—LB & CA

▲† **F. A. Baehner, Inc.**, Sarnowski Dr., Schnectady, N. Y., CA **$1,094,000** DIG-Phase II mechanical and electrical constr. and related work, Knolls Atomic Power Laboratory, Inv. No. AE 59-SCH-326, WEST MILTON, N. Y. Atomic Energy Comn., Bldg. AT-1 Knolls Atomic Power Laboratory, Schenectady, N. Y. Bids May 20. CD 4/20.

▲ **Arthur Venneri Co.**, 300 E. North Ave., Westfield, N. J., CA **$1,939,500**, eight 3 story HOUSING, Front St., ELIZABETH, N. J., Housing Auth. City of Elizabeth, 688 Maple Ave., Elizabeth, N. J. Bids May 19. CD 5/25, under LB.

▲ **Milau Assocs., Inc.**, 310 Northern Blvd., Great Neck, N. Y., CA Est. **$1,000,000**, 3 story FREIGHT TERMINAL, 3rd and Adam Sts., KEARNY, N. J. Chicago Express, Inc., 72 Fifth Ave., New York 11 N. Y., Rouse, Dubin & Ventura, 55 W. 42 St., New York 36, N. Y., archts.

▲ **R. M. Shoemaker Co.**, 245 S. 24th St., Phila., Pa. CA Est. **$7,000,000**, 20 story Penn Center House CO-OPERATIVE APARTMENT, Penn Blvd., 19th and 20th Sts., PHILA., PA. Penn Center House Inc., c/o George S. Idell, archt., Architects Bldgs., Phila., Pa. CD 1/9/53.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Ocala—AIRPORT—BA 7/14—City, City Hall, airport runway-taxiway and airfield lighting $675,000. Plans deposit $25. Howard, Needles, Tammen & Bergendoff, 1036 W. Amelia Ave., Orlando, engrs. CD 9/22.

BUILDINGS—BA

Fla., Miami Springs—CHURCH—BA 7/2—Grace Lutheran Church 254 Curtiss Parkway, 2 story, 102 x 220 CB-S steel church addn., Curtiss Parkway and Azure Way, Dean Parmelee, 1131 Ingraham Bldg., Miami, archt. Diver & Spooner, 3143 Ponce DeLeon Blvd., Coral Gables, mech engrs., Oliver Parsons 1200 SW 1 St., Miami, elec. engr. Walter Hubbard, 2240 Coral Way, Miami, assoc. archt.

Va., Falls Church—PLANT—BA 7/8—Melpar Inc., 3800 Arlington Blvd., 3 story plant addn. $2,000,000. Perry Duncan, 121 E. 54th St., New York, N. Y. archt. CD 2/20.

HEAVY CONSTRUCTION—LB & CA

▲ **Markowitz Bros. Inc.**, 5600 N. E. 4 Ave., Miami, Fla., LB **$1,319,818** pipeline for jet fuel transfer from Port Everglades Florida to Homestead Air Force Base, Florida, Broward and Dade Counties, FLORIDA, Florida Pipeline & Storage Co., 1115 17 St., N. W. Wash., D. C. Bids June 18. CD 5/13.

▲ **Sullivan, Long & Hagerty**, 801 5 Ave., N. Birmingham, Ala., LB **$3,047,800**, sewage treatment plant, pumping station, Proj. MES 15-12, JACKSONVILLE, FLA. City, City Hall, Jacksonville, Fla. Bids June 16. CD 5/8.

BUILDINGS—LB & CA

Mottley Constr. Co. Inc., Farmville, Va., CA **$536,000**. DORMITORY, Longwood College, FARMVILLE, VA. State of Virginia, Richmond, Va. Thompson & Payne, 609 Jefferson St., Roanoke, Va., archts. CD 3/16/55.

▲ **Air Products Co.**, Trexlertown, Allentown, Pa., CA, 650-ton per day HIGH PURITY OXYGEN PLANT, WEIRTON, W. VA. Weirton Steel Co., Div. National Steel Corp., Weirton, W. Va.

▲ **Daniel Constr. Co. Inc.**, 429 N. Main St., Greenville, S. C., CA **$15,000,000**, nylon yarn PLANT, GREENWOOD, S. C. The Chemstrand Corp., 350 5th Ave., New York, N. Y.

▲ **Massell Companies**, 40 Pryor St., S. W. Atlanta, Ga., CA **$2,000,000** SHOPPING CENTER, DECATUR, GA. Southern Shopping Center, Inc., c/o contractor, Willner & Millkey 761 Peachtree St., N. E. Atlanta, Ga., archts.

▲ **Rood Constr. Corp.**, 17850 NW 29 Court St., Miami, Fla., CA **$1,920,000**. Cedars of Lebanon HOSPITAL, NW 12 Ave. and NW 14 St., MIAMI, FLA. South Florida Hospital Corp., c/o Smith & Korach, archts., 1630 Lenox Ave., Miami Beach, Fla. CD 5/28/58.

▲ **Bishop Constr. Corp.**, P.O. Box 273-A, Tampa, Fla., separate contract, **$1,500,000**, 130 RESIDENCES, TAMPA, FLA.

▲† **Busboom & Rauh**, 6910 Forest Park Rd., Dallas, Tex., and **J. J. Fritch**, Box 35126, Dallas, Tex. (jointly), CA **$4,707,200**, 290 unit Capehart HOUSING, Keesler Air Force Base, BILOXI, MISS. Purchasing & Contracting Office, Keesler Air Force Base, Biloxi, Miss. Bids May 20. CD 6/5, under LB.

▲† **J. A. Jones Constr. Co.**, 1805 Hayes St., Nashville, Tenn., CA **$8,450,000**, G.M.&S. HOSPITAL and REGIONAL OFFICE, Bldg. No. 1, **Veterans Administration** Center JACKSON, MISS. Veterans Administration, Munitions Bldg., Wash., D. C. Bids June 9. CD 6/11, under LB.

▲ **Foster & Creighton Co.**, 1st Am. Bank Bldg., Nashville, Tenn., LB **$1,299,000**, radioactivity research SCIENCE LABORATORY, Vanderbilt Medical School, NASHVILLE, TENN. Vanderbilt University, Nashville, Tenn. CD 5/26.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **MICHIGAN**—BA 7/15—State Hy. Dpt., Mason Bldg., Lansing,

Mackinac Co.—4 mi. US 2, St. Ignace by-pass north of Mackinac Bridge incl. two grade separations, St. Ignace. $3,300,000.

▲ **Ind., Hammond**—BA 7/16—Hammond Sanitary Dist., 5143 Columbia Ave., Divs. 27A and 27B, combined relief, sewers, Robertsdale Area, $2,000,000; Div. 29, Forsyth sewerage pump station, $300,000, Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, Ill., engrs. Bids Nov. 20 rejected. CD 11/6 under LB.

▲ **O., Youngstown**—BA 8/4—City, City Hall, Contr. No. 18, sewage treatment plant. Plans deposit $60. Havens & Emerson, Leader Bldg., Cleveland, Zone 14, O., or Woolworth Bldg., New York, Zone 7, N. Y., engrs. CD 9/17/53.

BUILDINGS—BA

▲ **Ill., River Forest**—RESIDENCE HALL—BA 7/2—Concordia Teachers College, 7400 Augusta Blvd., college residence hall, central service heating plant, $1,100,000. Perkins & Will, 309 W. Jackson Blvd., Chicago, Zone 6, archt. CD 1/14.

▲ **O., Holmesville**—PLANT—BA 7/7—Addressograph-Multigraph Corp., 1200 Babbitt Rd., Cleveland 32, O., plant to process chemicals. $1,500,000. Extended date. Dalton & Dalton, The Arcade, Cleveland 14, O., archts. CD 5/5.

▲ **O., Cleveland Heights**—OFFICE, etc.—BA 7/22—Jewish Community Center, 2049 E. 10th St., Cleveland 6, (selected list bidders), central office and activities center, Mayfield Rd. $1,000,000. Geo. B. Mayer, The Arcade, Cleveland 14, O. and Sigmund Braverman, 7016 Euclid Ave., Cleveland 3, O., archts. CD 3/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Herlihy Mid-Continent Co.**, 407 S. Dearborn St., Chicago 5, Ill., CA **$3,000,000**, bridge over Grand Trunk railroad at 139th St., concrete paving, curb and gutters, sewers, Blue Island, CHICAGO, ILL., Grand Trunk & Western Railroad, 131 La Fayette St., Detroit, Mich. Bids May 11. Awarded June 19. CD 4/8.

▲ **Six Industries, Inc.**, 627 Railroad, Springfield, O., CA **$1,642,687**, general contract Airport Terminal and Cargo, Cox Municipal Airport, DAYTON, O. City, City Hall, Dayton, O. Bids June 9, awarded June 17. CD 6/16, under LB;

Tibbetts Plumbing & Heating Co., 4509 N. Dixie Dr., Dayton, O., CA **$533,440**, plumbing, heating, ventilating, air-conditioning for Terminal and Cargo Bldg., Cox Airport (Dayton, O.).

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.**, Bellefontaine, O., CA **$1,573,000** (7 bidders), HIGH SCHOOL, CINCINNATI, O. Sisters of Mercy, 2220 Victory Parkway, Cincinnati, O. Bids June 15. CD 6/4.

▲ **Sam W. Emerson Co.**, 1836 Euclid Ave., Cleveland 15, O., CA Est. **$1,500,000** (1 bidder), LIBRARY, CLEVELAND, O. Case Institute Technology, University Circle, Cleveland 6, O. Bids June 19. CD 5/5.

▲ **R. C. Mahon Co., Industrial Equip. Div.**, 6565 8 Mile Rd., Detroit, Mich., CA design and construct PLANT alteration, with paint finishing sys. for stove parts, MANSFIELD, O. Tappan Stove Co., 250 Wayne St., Mansfield, O. CD 3/26.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA est. **$30,000,000**, design and construct 50,000 kw. direct cycle, forced circulation, boiling water NUCLEAR REACTOR POWER STATION, Lake Michigan between Charlevoix and Petosky, MICHIGAN. Consumers Power Co., 212 Michigan Ave., Jackson, Mich.

General Electric Co., 1 River Rd., Schenectady, N. Y., CA NUCLEAR REACTOR and TURBINE GENERATOR, on Lake Michigan between Charlevoix and Petosky (Michigan).

▲ **General Electric Co.**, River Rd., Schenectady, N. Y. and **Westinghouse Electric Corp.**, Gateway Center, Pittsburgh, Pa., CA electrical equipment for 80 in. continuous HOT STRIP MILL, ECORSE, MICH. Great Lakes Steel Co., Div. National Steel Corp., Tecumseh Rd. and W. Jefferson St., Ecorse, Mich. CD 4/24, under CA.

▲ **Finitzo Bros.**, 5444 S. Archer Ave., Chicago, Ill., Owner Builds **$1,900,000** 100 HOMES 53 St. and Oak Park Ave., CHICAGO, ILL. Sidney H. Morris & Assocs., 134 N. LaSalle St., Chicago 1, Ill., archts.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

Iowa, Council Bluffs—BA 7/6—City, City Hall, sanitary sewers in Sects. 59-A, 59-B and 59-C involving 35,678 lin. ft. 6 in. to 18 in. virtr. clay sewer pipe in place; 1,813 lin. ft., 8 in. c.i. force main; 662 lin. ft. c.i. pipe jacked in place, etc., $256,000, Henningson, Durham & Richardson, Inc., 2962 Harney St., Omaha, Neb., engr. CD 3/30.

Minn., St. Anthony (P.O. Minneapolis 08)—BA 7/21—Village, sanitary sewer and water mains extension. $150,000. Comstock & Davis, Inc., RFD No. 2, Rosemount, Minn., engr.

† **Kansas**—BA On Or About 7/23—U. S. Eng., 1800 Federal Office Bldg., Kansas City, Zone 6, Mo., diversion channel and levees, Soldier Creek Diversion Unit, Section IV, Topeka. CIVENG-23-028-59-122. CD 9/19.

† **Tex., Abilene**—RAPCON CENTER—BA About 7/23—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, RAPCON center, Dyess Air Force Base, ENG-41-443-59-62. CD 9/9.

† **Nebraska**—BA 7/30—Bureau Reclamation, Dpt. Interior, St. Paul, Sherman Dam, Missouri River Basin Proj., Loup City, Sherman Co., Spec. DC 5214. CD 10/1.

† **Tex., Big Spring**—COMMUNICATION RECEIVER, etc.—BA About 7/23—U. S. Eng., Box 1600, Fort Worth, communication receiver and dir. finding UHF, Webb Air Force Base, ENG-41-443-59-63. CD 9/9.

BUILDINGS—BA

▲ **Iowa, Ames**—HOSPITAL—BA 7/14—City, City Hall, Mary Greeley Memorial Hospital addn., $1,500,000. Dane D. Morgan & Assocs., 314 N. 4 St., Burlington, archts., Herbert A. Arthur, Ames, assoc. archt.

▲ **Minn., Duluth**—SCHOOL—BA 7/15—St. Louis Co. Bd. Educ., Court House, Brookston-Alborn Area high school, intersection of Seville Rd., Hys. 2 and 33. $1,500,000. Plans deposit $25. Jyring & Whiteman, 1932 East 5th St., Hibbing, Minn., archts. CD 4/9.

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Colo., Pueblo—BANK—BA 7/21—Pueblo Savings & Trust Co., 300 N. Main, 2 story and bsmnt., 26,000 sq. ft. bank, $600,000. Donald H. More, 422 Colorado Bldg., Denver, and Russell Barr Williamson Oostburg, Wisconsin, archts. CD 4/22.

HEAVY CONSTRUCTION—LB & CA

▲† **Farnsworth & Chambers Co. Inc.**, Box 74, Houston 1, Tex., LB **$1,743,315**, Nike-Hercules Facilities (15 bldgs. and other work at each of 2 sites) Pantex and Canyon, Amarillo Air Force Base Defense Area. Eng 34-066-59-67, AMARILLO, TEX. U. S. Eng., 616 S. Boston St., Tulsa 2, Okla. Bids June 17. CD 5/27.

▲† **B. H. Baker Co.**, P.O. Box 173, Colorado Springs, Colo., LB **$1,093,218**, 1,750 sq. ft. MAINTENANCE BLDG., 1,500 sq. ft. heating plant, BOQ airmen's dormitories, 3,194 sq. ft. dining hall, 3,573 sq. ft. multi-purpose bldg., squadron headquarters, Cantonment Area, Sundance TM Site 201, ENG-25-066-59-132, Sundance, WYOMING. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 17. CD 5/25.

▲† **MacDonald Constr. Co.**, 1310 S. Grand Blvd., St. Louis 4, Mo., CA **$2,426,115**, relocation of railroad tracks 960 ft. tunnel and open-cut, removal existing elevated railroad structure past Jefferson National Expansion Memorial in river Front, ST. LOUIS, MO. National Park Service, Dpt. Interior, Jefferson National Expansion Memorial, 415 Market St., St. Louis 2, Mo. Bids June 8. CD 6/11, under LB.

BUILDINGS—LB & CA

▲† **W. A. Klinger, Inc.**, 2015 7 St., Sioux City, Iowa, LB **$1,089,745**, METALS DEVELOPMENT BLDG., Ames Laboratory, Proj. 59-e-15, AMES, IOWA. Atomic Energy Comn., Germantown, Md. Bids June 17. CD 9/17.

▲ **W. Baumeister Constr. Co.**, Hamm Bldg., St. Paul, Minn., CA **$1,000,000**, PRODUCTS PLANT near Hwy. 12 on Lake Elmo Rd. 5 mi. east of here, ST. PAUL, MINN. Durox of Minnesota, 414 Pioneer Bldg., St. Paul, Minn. Bettenburg, Townsend, Stolte & Comb, 1437 Marshall Ave., consult. engrs. CD 4/23.

▲ **John B. Gutmann Constr. Co.**, 1301 S. Vandeventer Ave., St. Louis 10, Mo., CA **$1,048,158**, 4 story, ground floor, penthouse, 55,000 sq. ft. CHAPEL and SCHOOL BLDG. for Mount Providence Boarding School for Boys, NORMANDY (ST. LOUIS 21 P.O.), MO. Sisters of Divine Providence, 8351 Florissant Rd., Normandy 21, Mo. Bids June 3. CD 6/15, under LB.

▲† **McCarthy Bros. Constr. Co.**, 4903 Delmar Blvd., **MacDonald Constr. Co.**, 1310 S. Grand Blvd. and **Fruin-Colnon Contg. Co.**, 1706 Olive St. all St. Louis, Mo., LB **$4,294,940** (7 bidders), general contract, 1½ and 2 story, 488,500 sq. ft. air-conditioned FEDERAL RECORDS CENTER, Winnebago, Koscinsko and Main Sts. and Marine Ave., ST. LOUIS, MO. General Services Admin., P. Bldgs. Service, 2306 Bannister Rd., Kansas City 10, Mo. Bids June 18. CD 5/12.

▲ **Sunshine Builders Inc.**, 655 Broadway, Denver, Colo., owner builds **$4,000,000** 220 brick HOMES, 6 Ave. and Uvalda St., AURORA, COLO., Miles Lantz, 933 Sherman, Denver, Colo., archt.

▲ **Hewson Constr. Co.**, 3894 South Elm St., Denver, Colo., CA Est. **$3,900,000** thirty 2 story, garden HOMES, garden patio and swimming pool DENVER, COLO. H. W. Hewson & Douglas Bell, 3894 S. Elm St., Denver, Colo. Curtis E. Copeland, 2440 Kipling, Lakewood, Colo., archt.

▲† **L. R. Foy Constr. Co., Inc.**, 234 204 St., Hutchinson, Kan., LB Schedule (2) **$1,215,738** est. $1,554,510 guided missile maintenance shop, Pueblo Ordnance Depot, ENG-25-066-59-134; LB Schedule (2a) **$1,251,938** est. $1,603,260 (13 bidders) guided missile maintenance shop, PUEBLO, COLO., ENG-25-066-59-134. U. S. Eng., 1709 Jackson 2, Neb. Bids June 18. CD 5/22.

▲ **Shelton Constr. Co.**, 4511 Travis St., Dallas, Tex., LB **$1,248,000**, base bid, ADMINISTRATION NURSES HOME, rehabilitation unit warehouse, DENTON, TEX. Bd. for Texas State Hospital & Special Schools, 4405 N. Lamar Blvd., Box "S", Capitol Station, Austin, Tex. Bids June 18. CD 6/9.

▲ **Linbeck Constr. Corp.**, Box 13007, Houston, Tex. LB **$1,299,000.** est. $1,500,000. NURSES COLLEGE, HOUSTON, TEX. Texas Medical Center, 1133 M. D. Anderson Blvd., (Texas Womens Univeristy, Denton-Operators) Houston, Tex. Bids June 11. CD 6/3.

FAR WEST

HEAVY CONSTRUCTION—BA

Utah, Salt Lake City—TAXIWAY, etc.—BA 7/9— Salt Lake Bd. Commrs., City Recorder-City-County Bldg., taxiway and holding aprons, light taxiway, install secondary power supply, Municipal Airport. $388,300. Plans deposit $15. CD 5/28.

Calif., Los Angeles—BA 7/10—Los Angeles County Flood Control Dist., 2250 Alcazar St., Brentwood Drain sys. and McClellan Dr. relief sewer, Los Angeles and Santa Monica, Storm Drain Bond Issue Proj. 42. $325,100. CD 11/10.

† **Washington** — LINES — BA 7/13 — Bonneville Power Admin., 1001 N.E. Lloyd Blvd., Portland, Ore., Schedule I, right-of-way clearing, access roads, 38.7 mi. Rocky Reach-Maple Valley 345-kv line No. 1, Douglas, Chelan and Kittitas Counties, Inv. 8953. Plans deposit $10. Extended date. CD 12/15.

† **Washington**—BA 7/22—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, clearing Howard A. Hanson reservoir area, Green River, Kanasket, Inv. 59-43. CD 11/13/57.

† **ARIZONA**—BA 7/23—Bureau Reclamation Dpt. Interior, Bldg. 1A Denver Federal Center, Denver, Colo., four 100,000 lb double-drum hoists for radical gates for Glen Canyon dam spillways, Colorado River Storage Project DS-5213. CD 9/16/57.

† **Utah**—BA 7/23—Bureau Reclamation, Dpt. Interior, 203 24th St., Ogden, earthwork, pipe lines, structures, Ricks Creek Laterals, Davis Aqueduct lateral sys., Salt Lake City, Davis Co., Weber Basin Proj., Spec. DC 5211. CD 9/30.

BUILDINGS—BA

† **Washington**—OFFICE—BA 7/6—U. S. Forest Service, 729 N. E. Oregon St., Portland, Ore., remodeling office, Walla Walla ranger station, Umatilla National Forest, Walla Walla Co.

Wash., Kelso—SCHOOL—BA 7/7—School Dist. 403, 1 story, 41,662 sq. ft., frame, concrete fdn., Junior High School. **$500,000.** Plans deposit $20. E. L. Mills & Assocs., 308 S. Tacoma Ave., Tacoma, archts. CD 11/12.

Calif., Sacramento — BOYS' RANCH — BA 7/8 — Bd. Supervs., Administration Bldg., 827 7th St., delinquent boys' ranch, near here. $400,000. Bids May 20 rejected. LB $464,000. CD 5/25, under LB.

▲ **Calif., Carmichael** — SCHOOL — BA 7/9 — San Juan Union High School Dist., 2919 Fair Oaks Blvd., Bella Vista High School. $1,000,000. Plans deposit $25. Bella Vista High School. $1,000,000. Plans deposit $25. Satterlee & Tomich, 1521 1 St., Sacramento, archt. CD 5/31/57.
25 HOUSES, "Pond Meadow Estates," Orange Ave., MILFORD, CONN.

Ore., Corvallis—MEMORIAL UNION ADDN—BA 7/17—State Bd. Higher Educ., University of Oregon, Eugene, Memorial Union addn., Oregon State College, Church, Newberry, Roehr & Schuette, Builders Exchange Bldg., Portland, archts. CD 5/8.

▲ **Calif., San Francisco**—HEADQUARTERS BLDG., etc.—BA 7/15—American President Lines, c/o Anshen & Allen, archts., 461 Bush St., San Francisco, Calif., 21 story, steel frame, precast concrete penthouse rooftop headquarters, Kearny and California Sts. $7,000,000. CD 12/18/57.

▲ **Wash., Spokane**—HOSPITAL—BA 7/27—Deaconess Hospital, W. 733 4 St., 6 story, rein.-con. hospital addn. $2,000,000. Fugard, Burt, Wilkinson & Orth, 520 N. Michigan St., Chicago, Ill., and Noel E. Thompson, Paulson Bldg., archts. CD 4/17/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Empire Gas Engineering Co.**, Box 1738, Atlanta, Ga., CA **$8,974,230,** heat and power plant, Clear Air Force Station, Inv. 59-48, CLEAR, ALASKA. U. S. Eng., P.O. Box 7002, Anchorage, Alaska. Bids June 10. CD 6/15, under LB.

▲† **M. M. Sundt Constr. Co.**, 440 S. Park Ave., Tuscon, Ariz., and **M. J. Bevanda Co.**, 6950 Tujunga St., Box 439, North Hollywood, Calif., LB **$4,119,000** runway and taxiway, Marine Corps Auxiliary Air Station Spec. 19477 YUMA, ARIZ., P. Wks. Officer 11 Naval Dist., 1220 Pacific Hy., San Diego, Calif., Bids June 23. CD 6/17.

▲† **Blaw-Knox Co.**, 300 6 Ave., Pittsburgh, Pa., LB **$7,132,408**, est. $8,973,390, (9 bidders), 12 BUILDINGS at IBM Sites near Fairchild Air Force Base, Inv. 59-116, SPOKANE, WASH. U. S. Eng., 1519 S. Alaskan Way, Seattle. 4, Wash. Bids June 23. CD 5/20.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Sully-Miller Contg. Co., 1500 W. 7th St., Long Beach, Calif., CA **$1,186,166,** grading, paving to widen 6.5 mi. Whittier Blvd. and Fullerton Rd. (State Hy. Rte. 2) to 4 lane divided hy. between Valley Home Ave. at Los Angeles Co. line in La Habra and Brea Blvd. in Fullerton, V11-Ora-2-Ru1, F, LHB, Orange Co. Bids June 4. CD 6/10.

▲ **Connolly-Pacific Co.**, 1925 Water St., Long Beach, Calif., LB **$1,999,182** (5 bidders) wharf utilities, Pier E, Berths 125, 126 and 127, Sched. A, LONG BEACH, CALIF. Long Beach Harbor Comn., 1333 El Embarcadero St., Long Beach, Calif. Bids June 17. CD 2/5/58.

▲ **Roven Spiegel Constr. Co.**, 5656 W. 3rd St., Los Angeles 36, Calif., CA **$1,489,200**, 126 frame, stucco DWELLINGS, Tr. 23402, CHATSWORTH, CALIF. Devonshire Manor, 5656 W. 3rd St., Los Angeles 36, Calif.

▲ **Hilp & Rhodes**, 918 Harrison St., San Francisco, Calif., CA **$5,000,000,** 5 story rein.-con. WAREHOUSE addn., LOS ANGELES, CALIF. Sears, Roebuck & Co., 2650 E. Olympic Blvd., Los Angeles, Calif.

▲† **D. D. Altermatt Co.** and **C. R. Fedrick Co.**, 320 Deer Island Lane, Novato, Calif. LB **$2,599,000.** (17 bidders) fuel storage and distr. sys., 1st and 2nd increments, NBy 20922. Lemoore Naval Air Station, LEMOORE, CALIF. Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. Bids June 17. CD 5/18.

▲ **Vido Artukovich & Son Inc.**, 11155 Rush St., El Monte, Calif. CA **$7,987,588**. West Coast Feeder Trunk, 14.57 mi. 60 and 66 in. steel pipeline from city of South Gate, Gardena, Lynwood, Compton and Hawthorne, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern California, 306 W. 3rd St., Los Angeles, Calif. Bids June 3, awarded June 16. CD 6/5 under LB.

▲ **Peter Kiewit Sons Co.**, 442 Post St., San Francisco, Calif. CA **$13,552,555.** 350 ft. high Union Valley Dam, El Dorado Co., Upper American River Proj., earthfill structure involving 12,000,000 cu. yds. material SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., 59th and R Sts., Sacramento, Calif. Bids June 16, awarded June 18. CD 6/18, under LB.

BUILDINGS—LB & CA

▲ **Byrd-Ramsey Constr. Co.**, Box 559, Lubbock, Tex. CA Est. **$3,000,000**. OFFICE, SALT LAKE CITY, UTAH. D. Harold Byrd, Tower Petroleum Bldg. Dallas, Tex.

▲ **A. J. Mullally**, 3109 Avalon Way, Seattle, Wash., Day Labor, **$1,000,000**, 10 story rein.-con. APARTMENT, 1200 Boylston Ave., SEATTLE, WASH. CD 4/20.

▲ **Harvey A. Nicholas**, 926 E. Slauson Ave., Los Angeles, Calif. CA **$2,984,000.** 1, 2 and 3 story A. W. Clark Junior High SCHOOL, New York Ave. and Rosemont Junior High School, La Crescenta, GLENDALE, CALIF. Glendale Unified School Dist., 411 E. Wilson Ave., Glendale, Calif. Bids June 11, awarded June 16. CD 6/15, under LB.

▲ **Robt. H. Grant**, 10401 Magnolia Ave., Anaheim, Calif. Owner Builds. **$1,884,800**. 160 DWELLINGS, Tr. 2610, GARDEN GROVE, CALIF.

▲ **Coastate Builders & Beswick Constr. Co.**, 2750 E. Spring St., Long Beach, Calif., CA **$1,031,140,** 1 and 2 story rein.-con. LODGE, 4101 E. Willow St., LONG BEACH, CALIF. Elks Lodge No. 888, 19 Cedar St., Long Beach, Calif. Francis J. Heusel, 730 3rd St., Long Beach, Calif., archt.

▲ **E. C. Messer Constr. Co.**, 4822 W. Jefferson Blvd., Los Angeles, Calif. CA **$2,459,000.** 2nd increment East Los Angeles Junior COLLEGE addns., 5357 E. Brooklyn Ave., LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids June 5, awarded June 18. CD 6/9, under LB.

▲ **Dinwiddie Constr. Co.**, Crocker Bldg., San Francisco, Calif. LB **$6,381,700**. est. $9,600,000. 8 story penthouse, 344,550 sq. ft. rein.-con. masonry precast concrete quartz aggreg. exterior, FEDERAL BLDG. (Lease Purchase) SACRAMENTO, CALIF. General Services Admin., 49-4th St., San Francisco, Calif. Bids June 19. CD 5/18.

▲ **Ted Schafer Constr. Co.**, 4563 N. Blackstone St., Fresno, Calif. CA Est. **$5,000,000.** 300 unit MOTEL, runway expan., hangar facilities, classrooms for student pilots. SAN CARLOS, CALIF. Howard Harper Aviation, San Carlos Airport, Bayshore Hy. and San Carlos Overpass, San Carlos, Calif. Oakes & McCline, 410 N. Abbey St., Fresno, Calif. archts.

▲ **Burgener Constr. Co.**, 1150 Silverado St., La Jolla, Calif., CA **$1,275,762**, 98 DWELLINGS, Donald Ct., Toch St., Tolowa St., Clairmont, Tr. No. 18, SAN DIEGO, CALIF. Suburban Developers, Box 569, La Jolla, Calif.

▲ **Williams Constr. Co.**, 12480 Paseo Cerro, Saratoga, Calif., CA est. **$25,000,000**, SHOPPING CENTER, SAN JOSE, CALIF. Ronald Williams, Town & Country Village Shopping Center, 855 E. Camino Rd., San Palo, Calif. Robert D. Page, Town & Country Village Shopping Center, San Palo, Calif., archt.

CANADA

BUILDINGS—BA

Ont., Hamilton—SCHOOL—BA 7/10—Hamilton Separate School Bd., 346 Main St. E., 3 story St. Mary's Separate School. $400,000. Plans deposit $50. Frank H. Burcher, 67 Queen St. S., archt. CD 1/30.

▲ **Ont., Toronto**—COLLEGIATE—BA 7/13—North York Bd. Educ., 15 Oakburn Cresc., 1 story, 62,000 sq. ft. Victoria Park Collegiate. $1,234,465. Plans deposit $50. Cox & Moffet, 4894 Dundas St. W., archts. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., engr. CD 1/26.

HEAVY CONSTRUCTION—LB & CA

▲ **Columbia Bitulithic Ltd.**, Granville Island, Vancouver, B.C., LB **$2,967,272,** (20 bidders), paving 31 mi. of Alaska Highway, Charlie Lake, BRITISH COLUMBIA. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids June 11. CD 5/26.

▲ **NEW BRUNSWICK and QUEBEC**—Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., Prov. Dpt. P. Wks., Parliament Bldg., Quebec City, Que. and Prov. Dpt. P. Wks., Parliament Bldgs., Frederickton, N. B. Canadian Bridge Co. Ltd., 1219 Walker Rd., Walkerville, Ont., CA **$2,956,224** superstructure of Interprovincial Bridge between Cross Pointe Que., and Campbellton N. B., spanning the Restigouche River, Bids June 4, awarded June 22. CD 6/12 under LB.

▲ **C. A. Pitts, General Contractor Ltd.**, 30 Commercial Rd., Leaside, Toronto, Ont., LB **$1,563,783** (7 bidders) substructure comprising 8 concrete piers and an abutment on the south side of the river and 15 concrete piers on North side, south abutment to Pier 15 N. Cornwall North Channel Bridge, International Rapids Sect., St. Lawrence Seaway, Cornwall, ONTARIO. St. Lawrence Seaway Auth., No. 2 Temporary Bldg., Ottawa, Ont. Bids June 2. CD 5/11.

▲ **Stanton Iron Works Co. Ltd.**, P.O. Box 3, Nottingham, England, LB **$3,673,803** (6 bidders) 22,000 tons c.i. tunnel linings for University Ave. Rapid Transit Subway, TORONTO, ONT.. Toronto Transit Comn., 1900 Yonge St., Toronto, Ont., Bids June 22. CD 6/2.

▲ **Carter Constr. Co. Ltd.**, 419 Cherry St., Toronto, Ont., LB **$3,898,660**, INTERMEDIATE CANTILEVER HANGAR Royal Canadian Air Force Base, TRENTON, ONT. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids June 9. CD 5/20.

▲ **McNamara (Que.) Ltd.**, 3901 Namur St., Montreal, Que., CA **$2,960,926**, HARBOR IMPRVS., POINTE AU PERE, QUE.; Dpt. P. Wks., Hunter Bldg. Ottawa, Ont. Awarded June 15. CD 5/20, under LB.

BUILDINGS—LB & CA

▲ **Ellis-Don Limited**, P.O. Box 852, London, Ont., CA est. **$2,000,000**, DIESEL SHOP, MONCTON, N.B., Canadian National Railways, Rm. 436, Union Station, Toronto, Ont. Awarded June 1959. CD 8/25/54.

▲ **Bennett-Pratt Ltd.**, 5 Maple Leaf Dr., Weston, Ont., CA **$1,069,756**, Runnymede Senior Public SCHOOL addns. and alterations, TORONTO, ONT., Toronto Bd. Educ., 155 College St., Toronto, Ont. Bids June 4. Awarded June 17. CD 6/18, under LB.

▲ **Colger Ltd.**, 1905 Tupper St., Montreal, Que., CA **$1,225,000**, 10 story, 60x242 ft. rein.-con. frame, brick stone, APARTMENT, garage in bsmnt. Cote St. Luc Rd., MONTREAL, QUE. Dijon Inc., c/o Mayerovitch & Bernstein, archts., 1500 Sherbrooke St., W. Montreal, Que. Irving S. Backler, 5253 Decarie Blvd., Montreal, Que., engr. Awarded June.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Western Contracting Corp.**, 400 Benson Bldg., Sioux City 15, Iowa, U. S. A., LB **$6,199,357** (8 bidders), port facilities GUAYAQUIL, ECUADOR. Autoridad Portuaria de Guayaquil, Guayaquil, Ecuador. CD 8/21/58.

▲ **Lummus Co.**, 2707 Weslayan St., Houston, Tex., U. S. A., CA **$21,000,000** REFINERY, SALAMANCA, MEXICO, Petroleos Mexicanos (Pemex) Dpt. P. Wks. Main Admin. Bldg. Mexico City, Mexico.

AMERICANS ABROAD

HEAVY CONSTRUCTION—BA

▲ **Thailand**—Bids in early October—Royal Irrigation Dpt. of Thailand, Bangkok, furnishing and delivering equipment and materials either f.o.b. Contractor's shipping point or c.i.f. Bangkok Wharf, Thailand, 3 power transformers each 56,000 kva single phase, 50 cycles, class FOW outdoor, 230-13 2 kv complete with oil accessories and spare parts, for Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand in accordance with Contract Documents, Inv. Ny. YS-3-2 Thai Liaison Engineer, c/o Engineering Consultants, Inc., 1949 West Mississippi Ave., Denver Zone 23, Colo., U. S. A. Adv. ENR 7/2. CD 1/28/58.

▲ **KENYA**—Government of Kenya, Nairobi.
Raymond International, Inc., 140 Cedar St., New York, N. Y., U. S. A., **Raymond International U. K. Ltd.**, London, England, and **Mowlem Constr. Co.**, Nairobi, Kenya, CA **$11,200,000**, 300 mi. road, 50 mi. new paved roads, 250 mi. surf. existing road.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—LB & CA

▲ **Pacific Contr. Co., Ltd.**, 2826 Kaihikapua, Honolulu, Hawaii, U. S. A., **Reed & Martin**, 6531 10 St., Fairbanks, Alaska, U. S. A., and **H. B. Zachary**, P.O. Box 10188, San Antonio 21, Tex., U. S. A., LB **$3,282,459**, transmitter and receiver facilities and target, track radar, Nike Zeus Program, KWAJALIEN ISLAND, MARSHALL ISLANDS. U. S. Eng., Army Ordnance Missile Command, Honolulu, Hawaii, U. S. A.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Wash., Seattle**—City, County-City Bldg., Zone 4, replace pipe lines from Lake Youngs, **$3,066,000**; pipe line along E. 195 St., **$1,450,000**; reservoir in northeast area of city, **$1,000,000**. R. W. Morse, city engr.

SEWERS, WASTE DISPOSAL

▲ **Ill., Rockford**—City, City Hall, storm sewers and drainage northwest area, **$1,059,815**; Amvets subdivision section, **$115,293**; Northeast relief sewer district; **$770,000**; relief sewer Waldo St. **$128,000**; sewers in Rolling Green area, **$922,890**; outfall sewer Halsted Rd., **$100,225**; Kent and Keith Creeks imprv. **$850,000**. Warren & Van Praag, Inc., 253 S. Park St., Decatur, Ill., consult. engr.

▲ **N. J., Paterson**—City, City Hall, storm sewers in Chatham, Chamberlain, Crosby and Totowa Aves., **$1,341,000**; sanitary sewers in Chamberlain Ave. and at City Hospital, **$236,000**. Capen & Sepede, 121 Main St., Lodi, consult. engrs. CD 9/9.

BRIDGES

▲ **Ill., Rockford**—City, City Hall, Whitman St. bridge, approaches, **$4,000,000**. De Leuw, Cather & Co., 150 N. Wacker St., Chicago, Ill., consult. engrs. Bids in Fall. CD 2/18.

▲ **Wash., Seattle**—City, County-City Bldg., Zone 4, viaduct connection between freeway and Alaskan Way at Connecticut St., **$6,260,000**; extension, imprv. W. Spokane St. viaduct, incl. interchanges, **$6,000,000**. R. W. Morse, city engr.

▲ **Alta., Edmonton**—City, City Hall, 1,600 ft. concrete or steel 3-lane open deck overpass extending from 103 to 106 Aves. across C.N.R. tracks. **$1,055,000**. C. C. Parker, Whittaker & Co., Edmonton, consult. engrs. J. D. A. Macdonald, Edmonton, staff engr. CD 9/26.

STREETS AND ROADS

Iowa, Sioux City—City, City Hall, paving, etc., various streets, **$526,897**. Bids soon.

▲ **Wash., Seattle**—City, County-City Bldg., Seattle, Zone 4, Empire expressway from E. Union St. to Bothell Way, **$6,764,000**; street connection between Montlake Dist. and new freeway at Roanoke St., **$2,357,000**; connection between freeway and Aurora Ave. at Mercer St., **$1,925,000**; connection between freeway and Aurora Ave. at N. 85 St., **$175,000**; grading Beacon Ave., **$145,112**. R. W. Morse, city engr. CD 4/30.

AIRPORTS

▲† **Alaska, Anchorage**—AIRPORT RUNWAY—State Dpt. P. Wks., Juneau, lengthen airport runway from 8,400 to 11,500 ft. **$4,000,000**. T. B. Bourne Associates of Alaska, Inc., and G. Johnson, Anchorage, consult. engrs.

▲† **Alaska, Fairbanks**—AIRPORT RUNWAY—State Dpt. P. Wks., Juneau, lengthen airport runway from 6,000 ft. to 11,500 ft. **$5,000,000**. T. B. Bourne Associates of Alaska, Inc., Anchorage, and Gray, Rogers, Graham & Osborne, 255 College Rd., Fairbanks, consult. engrs.

U. S. POSSESSIONS

▲ **Samoa**—Govt. of American Samoa, Pago Pago, coral fill and asphalt paving 9,000 x 150 ft. jet runway, concrete pads at runway ends for parking, Tafuna Airport, Island of Tutuila. **$3,520,715**. Belt, Lemmon & Lo, Hawaiian Life Bldg., Honolulu, Hawaii, consult. engrs.

PUBLIC BUILDINGS

▲ **Calif., Fullerton** — SCHOOL — Fullerton High School Dist., 201 E. Chapman Ave., plans by William Harrison, 816 W. 5th St., Los Angeles, rein.-con. high school, La Habra-Lowell area, La Habra. **$2,500,000**. CD 3/12/57.

▲ **Calif., Ontario** — SCHOOL — Ontario School Dist., Ontario, voted **$1,000,000** bonds, school. **$400,000**. J. D. Harnish, 222 W. "B" St., archt. CD 4/30.

▲ **Calif., Long Beach**—SCIENCE—State Div. Architecture, 1120 N. St., Sacramento, science bldg. addn. Long Beach State College, **$3,700,000**. Randolph & Johnson, 2315A East 7th St., elec. engrs. CD 12/4.

▲ **Calif., Sacramento**—HEADQUARTERS OFFICE—State Div. Architecture, 1120 N St., plans by Stone, Marraccini & Patterson & Assocs. & Donald Francis Haines & Assocs., 536 Mission St., San Francisco, headquarters office for Dpt. Motor Vehicles. **$12,500,000**. CD 12/5.

▲ **Calif., San Jose**—ENGINEERING, etc.—State Div. Architecture, 1120 N. St., Sacramento, plans by Harold C. Guilkey, 109 Stevenson St., San Francisco, engineering bldg. addn., **$7,000,000**. music bldg. addn. **$720,000**. speech drama bldg., **$620,000**. George K. Brokaw, 251 Post St., San Francisco, electrical engr. (for speech and music bldgs.) all at San Jose State College. CD 12/4.

▲ **Calif., Whittier**—SCHOOLS—Whittier Union High School Dist., voted **$7,000,000** bonds May 19, schools. CD 4/24.

▲ **Ill., Libertyville**—SCHOOL—Liberty-Fremont Consolidated High School, Park Ave., voted bonds June 6, Butler Lake and Brainard High School remodeling. **$3,200,000**. CD 6/1.

▲ **Ind., Franklin**—SCHOOL—Franklin & Needham Twp. School Bd., 101 N. Hurricane St., plans by Everett I. Brown, 991 Illinois Bldg., Indianapolis, 1 story high school, Northwood school area, **$2,000,000**.

▲ **Minn., Bloomington (P.O. Minneapolis)**—SCHOOLS—Bd. Educ. voted **$2,300,000** bonds June 10, incl. two elementary schools, **$560,000** each. Bids in August. CD 10/23/58.

▲ **N. J., Middletown**—SCHOOLS—Bd. Educ., Twp. Middletown, Tindale Rd., plans by Frederic Fessler, 532 Holmdel Rd., Hazlet, and Frederick Elsasser, 2015 Morris Ave., Union, 3 schools. **$3,750,000**.

▲ **N. Y., Brooklyn**—SCHOOL—Bd. Educ., 110 Livingston St., Zone 2, plans by Dominick Salvatt & Son, 175 Joralemon St., Zone 2, alterations to P.S. 224, 757-79 Wortman Ave. **$1,030,000**.

▲ **N. Y., New York**—GARAGE—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Rouse, Dubin & Ventura, 55 W. 42nd St., New York 36, N. Y., garage, St. James Pl., Madison St. and Pearl St. **$1,600,000**.

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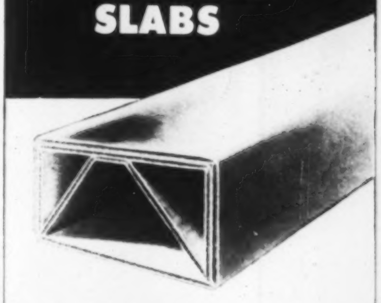

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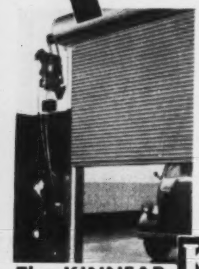

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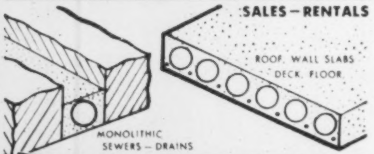

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▲ N. Y., **New York**—MUNICIPAL OFFICE—Dpt. P Wks., Municipal Bldg., New York, Zone 7, plans by Eggers & Higgins, 100 E. 42nd St., New York 17, N. Y. Proj. PW-162, municipal office, Park Row, Pearl St., Madison St. **$18,000,000.** CD 3/1/56.

▲ N. C., **High Point**—OFFICE—City and Guilford County plans by Voorhees & Everhart, 658½ N. Main St., city-county office bldg. **$1,100,000.**

▲ O., **Cincinnati**—SCHOOL—Forest Hills School Dist., 7537 Beechmont, Cincinnati, plans by Garriott & Becker, 2414 Grandview, Cincinnati, O., 1 story brick senior high school. **$1,830,000.** Green & Simes, Wooster Park, Mariemont, O., engrs. CD 11/10/58.

▲ O., **Cincinnati** — SCHOOL — Monfort Heights Local School Dist., W. Fork Rd., plans by Cellarius & Hilmer, 4th and Main, Cincinnati, O., 1 story, bsmntless, brick and steel junior high school. **$1,250,000.** CD 5/11.

▲ O., **Willoughby**—SCHOOLS—Willoughby-Eastlake Bd. Educ., 4284 Center St., bond election Nov. 3, schools. **$3,400,000.** CD 5/5.

▲ O., **Oxford**—DORMITORIES—State of Ohio, Dpt. P. Wks., Columbus, ., plans by Cellarius & Hilmer, 4th and Main, Cincinnati, O., seven-3 story, bsmnt., brick and stone dormitories, Miami University. **$7,500,000.** CD 6/11/56.

▲ O., **Toledo**—SCHOOLS—Bd. Educ., 1900 Linwood St., Toledo, **$20,000,000** bond election Nov. 3 to incl. high school, Detroit Ave. and Glanzman Rd. **$3,700,000** high school, Bowman Park. **$3,700,000,** Fulton school replacing. **$1,200,000,** Birmingham school addn. **$696,000,** elementary school, Elizabeth St.-Belmont Ave. area **$1,300,000,** Roosevelt school replacement **$700,000,** Mayfair school replacement **$700,000,** Glenwood school replacement **$700,000,** Marshall school replacement **$700,000,** Newbury school replacement **$700,000,** Chase school replacement **$700,000,** Central school replacement. **$700,000,** East Side school replacement **$700,000.**

▲ Pa., **Lancaster**—SCHOOL—Manor Twp. School Dist., 2189 W. Ridge Ave., elementary school, Manor Twp. **$1,400,000.**

▲ Tex., **Irving**—SCHOOL—Irving Ind. School Dist., plans by Wright, Rich & Assocs., 4350 N. Central Expressway, Dallas, high school. **$2,000,000.** Ed L. Wilson, 1810 Commerce St., Wm. K. Hall, Exchange Bank Bldg., Dallas, consult. engrs. CD 1/29.

▲ B. C., **Vancouver**—ARTS CENTER, etc.—University of British Columbia, Vancouver, plans by Thompson Berwick & Pratt, 1553 Robson St., Vancouver, fine arts center, Music and Architecture, **$1,500,000.,** 3 story 69 x 260 Commerce and Business Administration, 4 story 38 x 140 rein. conc. office, **$1,400,000.,** O. Safir & Co. 525 Seymour St., Vancouver consult engrs.

COMMERCIAL BUILDINGS

▲ Ala., **Mobile**—**MOTOR HOTEL**—Town House Motor Hotel Inc., 16 W. Cervantes, Pensacola, Fla., 150 room motor hotel at Government and George Sts. $2,000,000

▲ Calif., **Portuguese Bend (R. Sta. Palos Verdes Estates)**—RESIDENCES—Lind Corp., c/o Paul R. Williams, archt., 3757 Wilshire Blvd., Los Angeles. 150 masonry, brick, residences. **$3,090,000.**

▲ Conn., **Avon**—Houses—R. R. Galbert, Lovely St., plans by Allen W. Hixon Jr., 1 Centerwood Rd., Simsbury, 44 houses, "Parkview Acres" Lovely St., **$1,056,000**

▲ Conn., **Bloomfield**—HOUSES—Jaycee Builders, Mountain Ave., 64 houses, "Brown Mountain Manor" Mountain Ave., **$1,273,600**

▲ Ill., **Chicago**—HOSPITAL—Louis A. Weiss Memorial Hospital, 4646 N. Marine Dr., plans by Loebl, Schlossman & Bennett, 333 N. Michigan Ave., 8 story hospital addn. **$2,000,000.**

▲ Ill., **Chicago**—BANK ADDITION—St. Paul Federal Savings & Loan Association, 6720 W. North Ave., plans by Holabird & Root, 180 Wabash Ave., Chicago, 45,200 sq. ft., 2 story, brick, stone bank addition. **$1,300,000.**

Ind., **Culver**—MOTEL—Culver Military Academy, plans by W. B. Ittner & Assoc., 911 Locust St., St. Louis, Mo., 4 story, 76-room Culver Inn Motel, parking area **$999,500.**

Me., **North Windham**—DORMITORY—St. Joseph's College, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, dormitory (Standish Neck) 100 girls. **$500,000.** Bids in July. CD 10/27.

▲ Minn., **Austin**—HOTEL, etc.—Austin Community Hotel-Motel Co., plans by Hammel & Green, Inc., 1932½ University Ave., St. Paul, Minn., 5 story hotel-motel, swimming pool, **$1,000,000.** Orr-Schelen, Inc., 1104 Currie Ave., Minneapolis, Minn., consult. engr. CD 11/7/58.

▲ N. J., **Florence**—APARTMENT—Cedar Lane Developers, Inc., c/o Michael Chanti, Knickerbocker Ave., Roebling, 356-units apartment, Rte. 130, **$4,000,000.**

▲ N. J., **Princeton**—CLUB HOUSE AND MOTEL—Princeton Recreation Center, Inc., R.D. 3, club house, motel. **$2,500,000.**

N. Y., **Brooklyn**—APARTMENT—Max Hoffman, 789 Franklin Ave., Zone 16, plans by Seelig & Finkelstein, 153 Pierrepont St., Zone 2, 6 story apartment and 19-car garage, 303 99th St. **$475,000.**

N. Y., **New York**—APARTMENT—14 East Corp., 650 Whittier St., Zone 59, plans by Schuman & Lichtenstein, 360 Lexington Ave., Zone 17, apartment, 316-29th E. 58th St. **$725,000.**

N. Y., **New York**—APARTMENT—259-261 W. 12th St. Corp., 40 E. 50th St., Zone 22, plans by Sidney Goldhammer, 44 W. 56th St., Zone 19, apartment, 261-75 W. 12th St. **$400,000.**

▲ N. Y., **New York**—APARTMENT—William Buxbaum, 558 Madison Ave., Zone 22, plans by Sylvan Bien, 342 Madison Ave., Zone 17, 20 story apartment, 35-43 Sutton Pl. at E. 59th St. **$2,500,000.**

▲ N. Y., **New York**—APARTMENT—Hathaway Properties, Inc., 565 Fifth Ave., Zone 17, plans by Leo Stillman, 332 E. 149th St., Zone 51, 9 story apartment, 92-96 Fifth Ave. at W. 15th St. **$1,250,000.**

N. Y., **New York**—APARTMENT—Seventh Washington Owning Corp., 66 West Houston St., Zone 12, plans by S. J. Kessler & Sons, 551 Fifth Ave., Zone 17, apartment, 130-8 Bleeker St. at West Broadway. **$400,000.**

N. Y., **New York**—APARTMENT—Sutton Junior Corp., 540 E. 84th St., Zone 28, plans by David Kraus, 300 W. 43rd St., Zone 36, 9 story apartment, 247-49 E. 53rd St. **$425,000.**

▲ N. C., **Greensboro**—HOSPITAL—Moses Cone Hospital 1200 N. Elm St., plans by Loewenstein-Atkinson Assocs., 1001 E. Bessemer Ave., 150 bed, hospital addn., **$2,500,000.** J. E. Sirrine Co., 215 S. Main St., Greenville, S. C., consult. engr.

▲ O., **Cincinnati**—HOMES—Lester Lesit, 5295 Belclare Ave., 135-one fl., bsmnt., brick homes on Shady Lane. **$2,150,000.** Edw. Niemeier, 4484 Harrison Ave., Cincinnati, O., engr.

▲ Ore., **Portland**—SHOPPING CENTER—Julius Fligelman & Edward Meltzer, 711 S.W. Alder St., plans by Robert J. Mayer & Assocs., 4055 Wilshire, Los Angeles, Calif., Eastport Plaza Shopping Center. **$5,000,000.**

▲ Pa., **Phila.**—HOSPITAL—American Federation of Labor Medical Service Plan, 1326 Vine St., hospital, Langdon St. **$4,000,000.**

▲ Tenn., **Memphis**—COMMERCIAL—Sterick Bldg. Inc., 8 N. 3rd St., plans by A. L. Aydelotte & Assocs. 2080 Peabody Ave.; 13 story Sterick Bldg. Annex incl. parking garage, 11 story office and private club **$2,500,000.**

▲ Tenn., **Nashville**—APARTMENT—N. H. Barker, 1205 8th Ave. S., plans by Billis & Johnson, 1809 8th Ave. S., 9 story, 170 unit apartment, Capitol Hill Redevelopment Area. **$1,450,000.**

▲ Tex., **Brownsville**—MOTEL, etc.—C. Howard & Assocs., Harlingen, 300 unit motel **$3,000,000;** swimming pool **$100,000;** area lighting sys. **$100,000;** boat docks and appurtenances for fishing, pleasure **$100,000,** Lower Padre Island, northeast of here.

▲ Tex., **Odessa**—CLUB, etc.—Owner c/o Wm. B. Weimer & Morgan & O'Neal, proj. archts., 622 Commercial Bank Bldg., thunderbird club **$4,500,000;** swimming pool **$100,000;** area lighting sys. **$90,000;** paved area and parking center for 3,000 cars **$175,000,** near Barksdale Bridge.

INDUSTRIAL BUILDINGS

Conn., **Bridgeport** — BAKERY — Ann's Newfield Bakeries, Inc., 1691 Main St., 2 story bakery, 1691 Main St. **$180,000.**

Ga., **Atlanta**—TRUCK FREIGHT TERMINAL—Transcontinental Freight Service, 1127 Wilson St., Los Angeles, Calif., truck freight terminal. **$500,000.**

▲ Mass., **Chicopee**—PLANT, etc.—Wall Street Journal, 44 Broad St., New York 4, N. Y., printing plant and office. Over **$1,000,000.**

N. J., **Clifton**—PLANT—Bright Star Industries, c/o Harry Siegmund, archt., 35 Argyle Court, Summit, plant addn. (mfgs. batteries). **$110,000.**

▲ N. J., **Somerville**—PLANT—American Vit[illegible]ucts Co., National City Bank Bldg., Cleveland 14, O., plant for production of vitrified clay pipe [illegible] products, **$4,000,000.** Paul Henley, c/o owner, engr.

▲ N. Y., **Lackawanna**—OXYGEN BLDG.—Bethlehem Steel Co., Bethlehem, Pa., oxygen bldg. at Lackawanna Works. **$5,000,000.** CD 1/31/56.

▲ Pa., **Phila.**—PLANT—American Foam Rubber Co., Salem Ave., Burlington, N. J., mfg. plant, State Rd. **$1,500,000.**

S. C., **North Charleston**—MACHINERY ROOM—West Virginia Pulp & Paper Co., Cosgrove Ave., machinery room addn. **$1,000,000.** George C. Brown, c/o owner, engr.

▲ S. C., **Simpsonville**—PLANT—W. R. Grace & Co., Cryovac Div., plant addn. **$2,000,000.**

Tex., **Ferris**—GRAIN STORAGE—Ferris Grain Co., Inc., Ferris, 405,000 bu. grain storage, structural and metal paneling, concrete floors, 60 x 260 ft. with 30 ft. walls. **$125,000.**

▲ Utah, **Sulphurdale (P.O. Fillmore)**—PLANT—Dixon-Western Chemicals Inc. (Dixon Chemical Corp. & American Sulphur & Refining Co.), 8929 Wilshire Blvd., Beverly Hills, Calif., sulphuric acid plants **$3,500,000.**

UNCLASSIFIED

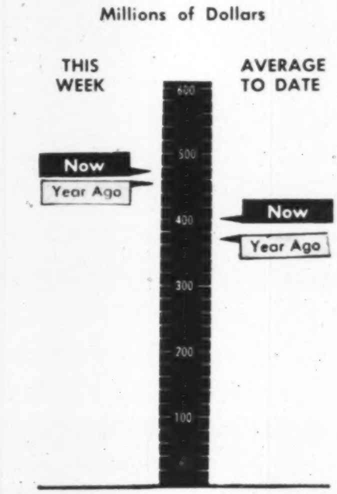
Ill., **Belleville**—STADIUM—Our Lady of the Snows League, 15 S. 59 St., 15,000-seat outdoor stadium, Hy. 460, near here. **$400,000.**

▲ **Mississippi, Georgia, Alabama, Florida and South Carolina**—GAS PIPE LINE, etc.—Southern Natural Gas Co., Watts Bldg., Birmingham, Ala., 461 mi. 16- to 24-in. main gas pipe, 115 mi. branch lines, 11 mi. field lines, compressors. **$55,000,000.** FPC approved.

▲ Wash., **Seattle**—POWER TRANSMISSION LINES—City, County-City Bldg., Zone 4, relocation power lines along Seattle Freeway. **$2,500,000;** power transmission lines in Maple Valley, Tukwila and Duwamish areas. **$800,000.**

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

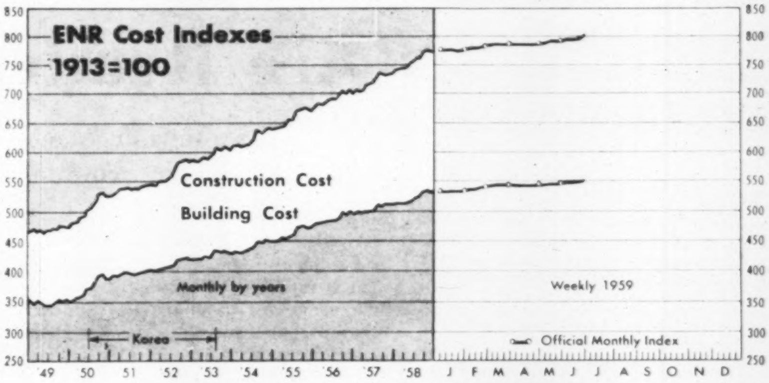
	This Week	Cum. 27 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr.	$474.1	$10,829.9	+ 7
By Ownership			
PRIVATE	239.5	5,279.1	+23
PUBLIC	234.6	5,550.8	− 1
State & Municipal	177.2	3,927.2	− 6
Federal	57.4	1,623.6	0
By Type of Work			
PUBLIC			
Waterworks	13.7	233.2	+17
Sewerage	22.8	349.5	+10
Bridges*	17.4	324.1	+ 1
Highways	87.7	1,662.4	+ 1
Earthwork, Waterways	16.2	446.6	−32
Buildings			
Excl. Housing	34.2	1,393.4	+ 2
Housing	15.9	409.2	−37
Unclassified	30.4	739.3	+ 3
PRIVATE			
Buildings			
Mass Housing	90.1	2,439.4	+24
Commercial	52.1	1,169.5	+13
Industrial	34.2	1,391.3	+38
Unclassified	59.4	272.0	+ 7

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of June 28	Cum. 26 wks 1959	Chge '58-'59
	millions		%
Corporate Securities	$28.8	$2,135.9	−24
State and Municipal:			
All Except Housing	77.8	3,165.4	−12
Housing	13.2	43.8	+30
Federal Loans	5.4	72.0	−22
Federal Aid	....	18.0	....
Total Nonfederal	$125.2	$5,435.1	−17
Federal Appropriations:			
Projects in U. S.	....	$38.3	−95
Outside U. S.	....	.....	−100
Total New Capital	$125.2	$5,473.4	−26



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of June 25 1959	% Change from May 28 1959	% Change from June 26 1958
Construction Cost	804.61	+1.2	+5.8
Building Cost	551.30	+0.5	+5.2

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1919 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

STATE AND MUNICIPAL BOND SALES

	1959 June	1959 6-Mos.	Percent Change from 1958 June	Percent Change from 1958 6-Mos.
	(millions)			
All Construction	$331.9	$3,219.0	− 19.1	−11.6
Buildings	137.4	1,268.1	− 19.4	−14.5
Schools	93.7	825.0	− 25.5	−19.2
Housing	13.2	43.8	− 2.0	+29.4
Other buildings	30.5	399.3	− 2.0	− 6.8
Heavy Construction	194.5	1,950.9	− 18.9	− 9.6
Waterworks	53.2	329.8	+157.9	+43.5
Sewerage	29.9	241.7	+ 47.3	− 2.3
Bridges	0.015	10.8	− 97.3	−55.0
Highways	6.1	262.2	− 94.6	−61.7
Earthwork, dams, waterways	42.4	530.6	+1,272.2	+45.1
Unclassified	62.9	575.8	− 24.7	− 5.1
Electric and gas utilities	7.6	53.0	− 53.9	−46.4
Airports	2.3	169.5	− 36.5	+236.5
Parking facilities	1.6	11.4	+ 82.7	−16.8
Other	51.4	341.9	− 17.7	−22.9

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49=100—BLS	May 1959	Percent Change from last Month	Percent Change from last Year
All Types	171.9	−0.1	+ 3.9
Cranes, Draglines, Shovels	168.4	−0.5	+ 2.8
Shovel, ¾ cu yd	172.5	0	+ 2.9
Shovel, 1—1½ cu yd	180.5	−2.2	+ 1.1
Shovel, 2—2½ cu yd	162.1	0	+ 5.0
Crane, truck mounted	165.7	−2.3	+ 0.9
Scrapers and Graders	165.7	0	+ 4.3
Scraper, 4 Wheel, 12–15 cu yd	156.8	0	+ 3.6
Grader, heavy duty	172.6	0	+ 5.2
Tractors (non-farm; incl: industrial)	187.8	0	+ 4.0
Wheel-type, off-highway (January 1955=100)	128.2	0	− 0.2
Crawler type, 80–120 dhp	191.3	0	+ 2.5
Machinery, Tractor Mounted	168.6	0	+ 4.3
Dozer, hydraulic control	186.6	0	+ 5.2
Loader, shovel type	161.5	0	+ 4.9
Specialized Machinery	155.1	+0.4	+ 3.2
Ditcher	156.6	0	+ 1.6
Roller, tandem	209.8	+1.8	+ 8.6
Roller, 3 wheels	170.2	0	+ 5.3
Portable Air Compressors	167.5	0	+ 5.3
Contractors Air Tools	181.6	0	+10.4
Mixers, Pavers, Spreaders	155.8	0	+ 4.6
Mixer, truck, 6 cu yd	131.1	0	+ 3.0
Mixer, paving, 34 cu ft	191.6	0	+ 3.5
Bituminous paver	162.6	0	+ 6.3

Contractors Are Ready for Strike

Steel inventories will provide a two-to-four week cushion. But a longer strike will mean trouble.

Contractors and fabricators report they're prepared to weather a steel mill shutdown of two weeks to 30 days. And extension of the strike deadline until July 15 gives contractors more time to add to inventories.

But even a last minute settlement of the dispute would not prevent loss of about one week's output of material. And you have to add another two weeks of relative steel famine to the duration of a strike. It takes that long to refill the pipelines with raw materials from source to the mills, and to return equipment to normal production.

Apparently contractors and fabricators are not relying on foreign steel to carry them through. Despite the sharp rise in steel imports in recent months, the industry is steering clear of heavy shapes and plate produced abroad. This reaffirms an ENR survey of contractors and engineers who reported that use of foreign steel is confined mostly to light materials (ENR Mar. 12, p. 21).

However, foreign producers are not overlooking the possibility that some in the industry will change their minds. It's estimated that more than 45,000 tons of foreign steel have come into Chicago since early May. During all of 1958, only 49,000 tons entered that port. Most of the steel arriving is heavy stock.

Three of the six general steel strikes since the end of World War II lasted more than 30 days. The others ranged from only hours up to 28 days. Here's the tally:

- 1946—28 days.
- 1949—42 days.
- 1952—One strike of three days. A second of 55 days
- 1955—12 hours.
- 1956—34 days.

In Florida, heavy construction contractors generally won't be affected. Reinforced and prestressed concrete is the major building material there. And there is no shortage of reinforcing bars and strand. Florida Steel Corp., an important source of bars, is not involved in negotiations.

On the other hand, homebuilders are extremely concerned. They use aluminum windows almost exclusively. The major source of supply for the windows is Truscon Steel Division of Republic Steel Corp., one of the companies involved in contract negotiations.

Another unusual condition shows up in the Denver area, where reinforcing steel is expected to become a problem material almost immediately. Contractors report that missile launching facilities under construction in Denver, and in Cheyenne, Wyo., are using reinforcing steel in huge quantities.

Similar problems may become apparent wherever big missile installations are under way.

Nationally, there is no general pattern. Shortages in various types of steel products will be a regional problem. Some sections report that wide flange beams will disappear first. Others report that shortages of galvanized sheet and rebars will halt, or at least slow the progress of various jobs. And some report that miscellaneous and ornamental iron and steel will cause the first headache. One contractor in the Dallas area says his problem could well be nails. Most of his contracts are for Capehart military housing.

On the West Coast, a spokesman for Guy F. Atkinson Co., San Francisco, estimates that half of its 40 current jobs would come to a halt in from one week to a month. Six other scheduled jobs would be delayed because steel is now on order. The largest job is for $20 million. The others range in size from $1 million to $5 million.

Atkinson does not expect warehouses to meet all the company's needs, "but they certainly will help—and they certainly will charge."

Barrett Construction Co., also of San Francisco, says only one job will be stopped, and that one immediately. It's a $6.5-million project, which is awaiting delivery of steel columns and beams now on order. Thirteen other contracts are not expected to be "measurably affected."

And Haas and Haynie believes it is in the best shape of all in the area. None of its 14 projects will be stopped. "Any steel stoppage would have to last more than two months before we'd feel it," a company spokesman says.

Fabricators in the Bay area report they are in fairly good shape. They feel they have done an excellent job of stockpiling steel and reaching agreements with warehouses. Large fabricators in and around San Francisco report enough stock to last from two to three months. In the event of a lengthy strike, wide flange beams will be the first to disappear.

Warehouses in the Bay area say they are stocked with a complete and balanced supply of structurals, with the exception of galvanized sheet. Generally, warehouses expect to be able to supply needs for 60 to 90 days.

Galvanized sheet is also expected to be in short supply in southern California. And heavy sections are also fairly tight. Warehouses report they were unable to stock up on sections.

Fluor Corporation, Ltd., Los Angeles, says it will have to depend on its fabricators, who have built up inventories during the past four months.

Contractors and fabricators in the Detroit and Chicago areas are in a relatively sound position. Their own inventories and warehouses could probably supply them through a 30 to 40-day strike.

Michigan's big highway construction program is not expected to be impeded. Highway Commissioner John Mackie says the state is in excellent shape to proceed with all highway and expressway projects now under construction or scheduled to start before late fall.

In Dallas, estimates of ability to operate range from 30 days to eight weeks. Most contractors and fabricators place their operating ability in the 30-day range.

Warehouses have supplies sufficient to last 30 to 45 days, based on tonnage. In shortest supply is plate and galvanized sheet. These would go in 30 days, perhaps less.

Major contractors in New York City are certain they can withstand a 30-day walkout in the mills.

Boston area contractors are in about the same position. A spokesman for Perini Corp., Framingham, says a strike would have to last at least 30 days before the company's operations would be seriously impaired. "After that, we would have to cut our working force by about 50%," he reports. First item missing from the company's stockpile would be wide flange beams. But another major company in the area would see some of its contracts slowed or stopped within a week or two.

Stocks of steel in warehouses and fabricators' yards are sufficient to last from two to three weeks. Angles, channels and wide flange beams would be the first to disappear.

Federal Guns Aimed at Inflation

The Administration is stepping up its psychological warefare against inflation.

President Eisenhower this week released the first of a series of statements by his blue-ribbon committee of "inflation fighters." The group, headed by Vice-President Nixon, includes Cabinet members and economic advisers to the Administration.

Labor practices in construction may play an important part in the series of studies. Mr. Nixon believes output per manhour may be lagging in some types of construction and other industries.

The first report warned that union contracts being made this year in construction and other industries "could result in wage increases of such magnitude as to lead to price increases."

Timing of the group's first report was significant. It came less than 48 hours before the scheduled expiration of the labor contracts with the steel industry. It thus was seen as a warning to the negotiators not to touch off a new inflation surge. Apparently it had some influence; talks will continue.

Rising wages is not the only trend worrying the Administration. Others are rising prices of industrial commodities in wholesale markets, the steady rise in prices of some consumer goods and services, and possibility that Congress will unbalance the budget for fiscal 1960.

Mr. Eisenhower and his economic advisors believe the economy is now at a critical point. From here, it might easily swing into a broad, inflationary cycle.

The Nixon report does not offer any new inflation-fighting ideas. It merely urges Congress to enact measures already requested by the Administration: an amendment to the Employment Act specifically making price stability a goal of government and raising the interest ceiling on long-term government bonds.

Mr. Nixon is stressing the "positive" way to check inflation. Balancing the budget or credit restrictions is not enough, he says. He plays up the importance of increases in productivity and of economic expansion in general as the basic solution.

This allows wages to rise so long as increases do not exceed expansion of output per manhour. Prices thus could remain steady, while living standards improve.

As part of the broad program the Nixon committee will study these two areas:

Tax reform: Specific recommendations will be made later on how tax rates could be changed to stimulate economic growth. Treasury Secretary Robert B. Anderson will play the leading role here along with Mr. Nixon. The two may not always agree. Mr. Anderson stresses the need for immediate revenue to meet government expenses and retire some of the debt. Mr. Nixon during the 1957 recession argued that a general reduction of personal and corporate income rates might result in larger receipts later, due to economic growth. However, their differences will be ironed out. Whatever the Nixon committee recommends will be official Administration policy, and will be backed by the Treasury Department. Mr. Eisenhower will probably use the committee findings as the basis for whatever reform proposals he will make to Congress next year.

Practices of labor and business: The report warns against excessive concentration of power in the hands of labor or business. Remedies "should be sought through eliminating the power to injure the public interest," the committee added. But it rejected a suggestion that the federal government should review the decisions of businesses, unions or of collective bargaining. A bill calling for price review is now before Congress, backed by a group of northern Democrats.

The scope of the committee's activities puts the Vice-President at the head of a policy-making group that will not just set the pace for the President's legislative program for 1960. It will also supply Mr. Nixon with an economic platform on which to seek the presidency in 1960. It will also have a marked influence on the platform writers for the GOP convention.

Kaiser Expands Business Fight

Hawaii's business battle, which sees two wealthy and successful businessmen pitted against each other, is getting hotter. The combatants are Henry J. Kaiser, Sr. and Walter F. Dillingham.

The skirmish flared when Mr. Kaiser asked the Honolulu City Planning Commission to approve location of a new $12-million plant for Permanente Cement Co. in an area not zoned for heavy industry. Mr. Kaiser, chairman-founder of the company, ran into opposition from Mr. Dillingham, an investor in the newly formed Hawaiian Cement Corp. (ENR June 18, p. 296).

But while the Planning Commission withheld a decision until a preliminary master zoning plan for the region is completed, Mr. Kaiser moved on two other fronts. He acquired a second site for a cement plant about two miles from the site being disputed. The second site is in an area zoned for industry.

Now Mr. Kaiser is going to enter the dredging business in Hawaii. This move will place him in direct competition with Hawaiian Dredging and Construction Co., the key operation in the industrial holdings headed by Mr. Dillingham.

Mr. Kaiser says he now owns a $1-million dredging unit that will arrive in Hawaii shortly. He has also arranged for the use of a larger $3-million unit.

Mr. Kaiser says the equipment will be used in the construction of his proposed $350-million Hawaii-Kai resort-residential project.

Plans for 22,000-Acre Project Die

A decision by the state of Washington's Supreme Court may have permanently dashed plans for a multi-million-dollar industrial development near Seattle.

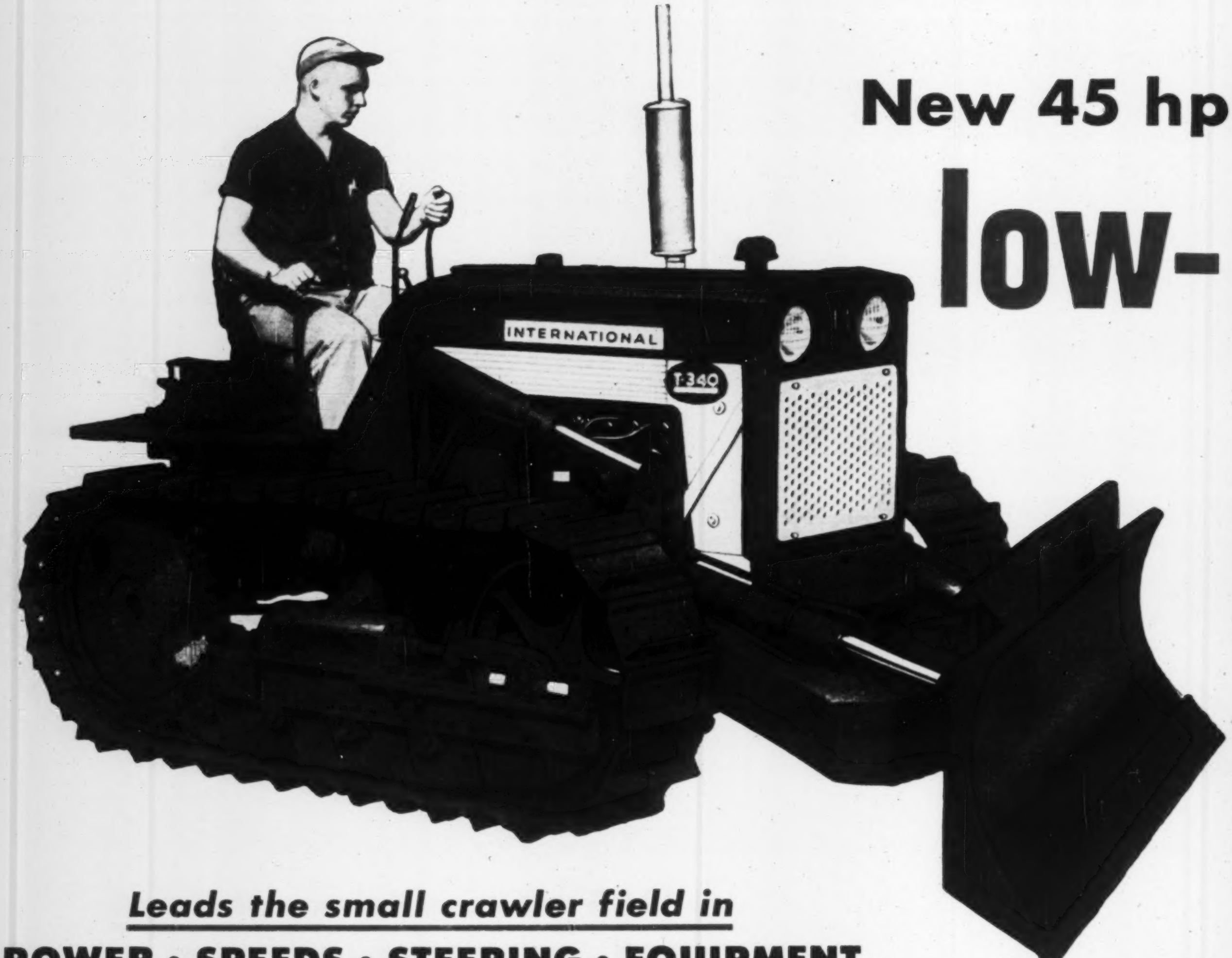
The court upheld a lower court's decision that the Port of Seattle cannot levy taxes to pay for improvement and reclamation of land that would ultimately be sold to private individuals.

The site planned for improvement was Duwamish Valley, south of Seattle. The Port of Seattle had been collecting taxes since early last year. Total collections of $2.7 million will now be refunded to the taxpayers.

Port officials had planned to straighten the Duwamish River, construct bridges and access roads and install utilities. Initial costs were placed at $15 million. Completion of the reclamation and improvement work would have provided 22,000 acres of industrial land.

Chances of private interests going ahead on their own are dim.

New 45 hp
low-



New IH hydraulic bull-grader—angled, tilted, lifted, and lowered hydraulically from the tractor seat.

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10 speeds forward with exclusive IH Torque Amplifier drive. Boost pull- or-push-power on-the-go in any gear without shifting.

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▶

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INTERNATIONAL

Bill of Rights May Boomerang

- **Efforts to legislate union democracy may threaten it instead, critics say.**
- **The controversy, added to the Taft-Hartley issue, may stall action on labor reform.**

The "bill of rights" for union members may yet wreck the labor reform bill, which is about to emerge from the House Education and Labor Committee.

Its provocative features, piled atop the irritations of other slogans—"union corruption" and "Taft-Hartley amendments"—can result in the kind of legislative shambles that leaves little to salvage.

The basic difficulty is that the issue has added another dimension to the legislative problem by raising this question: To what extent, if any, must Congress specifically regulate internal union democracy to facilitate Congressional elimination of union corruption?

This is precisely the type of question that defeated the labor bill last year, when few could agree on how far it is necessary to amend the Taft-Hartley Act to cope with corruption. The secondary boycott and organizational picketing issues are two examples.

The other side of this practical problem is that the issue, by its very nature, has enough attraction and appeal to prevent its being swept under the rug at this point.

Coupled with these difficulties are a number of serious legal problems that have already been raised. At what point, for example, does a bill of rights begin to destroy the democratic process? When does it deny equal protection of the law as between private organizations? Do its enforcement provisions preserve freedom from self-incrimination? Are its provisions precise and definite enough to meet the requirements of law?

Almost any one of these side issues is enough to obscure as well as to jeopardize the principal objective of Congress and to throw the entire reform issue into an ill-defined free-for-all.

• **Conflicting views**—The stage was set two months ago by Sen. John L. McClellan (D., Ark.) when he introduced a bill-of-rights amendment that led to what is now Title I of the Senate-passed Kennedy labor reform bill (see table). Entitled "Bill of Rights of Members of Labor Organizations," the amendment seeks to prevent autocratic or oligarchic unions from continuing to trample on the legal and constitutional rights of individual members.

The amendment has provoked dissension in the Eisenhower Administration, alarmed the entire labor movement, given opponents of labor another approach to the curbing of union power and provided a new scapegoat for a possible collapse in the labor reform movement.

Organized labor, led by the teamsters union and the United Mine Workers, claims the bill of rights is designed to hamstring, if not destroy, the free labor movement. (This is the same kind of argument that the National Right to Work Committee has applied to the construction industry amendments in the Kennedy bill. The committee accuses union officials of using the reform bill as a "Trojan horse" to ride to "new and far-reaching legislative victories.")

The AFL-CIO says parts of the Senate bill of rights are too general to be understood or obeyed, while others are so detailed that they "inhibit" reasonable and proper union activity and stifle the union democracy that the bill seeks to promote.

It feels that the bill violates the democratic right of self-determination, imposes unconstitutional criminal penalties of "fantastic severity," would create "anarchy" within unions and would provide a fertile field for endless, costly and time-consuming litigation.

What is a "full and fair" hearing or a "reasonable rule or regulation" under the Senate version, it asks. Does the law prevent the ouster of a drunkard from a union meeting? Does it make a union official financially liable for honest mistakes? Does it require a union to admit Communists and company spies to membership? Does it destroy established grievance or arbitration machinery? Does it require collective bargaining to be conducted in "town meeting fashion?"

The federation doubts that unions

The Senate's Bill of Rights

- Grants every union member "equal rights" to nominate candidates, vote in elections and attend and participate in meetings. These rights are subject to "reasonable" union regulations.

- Grants all union members the right to "meet and assemble freely" and to express their views on any candidate or union business. These rights are subject to "established and reasonable" union rules.

- Prohibits the setting or changing of union dues or initiation fees except by the members at a duly constituted meeting, referendum or convention.

- Prohibits unions from preventing any union member from suing anyone, testifying in any case or lobbying for any legislation. Only provisos are that union members suing the union or an officer must first exhaust "reasonable hearing procedures" within the union and that no employer help finance the suit.

- Prohibits a union disciplining a member for any reason in any way (including fine, suspension, expulsion) unless served with "written specific charges," given "reasonable time" to prepare a defense and granted a "full and fair" hearing.

- Voids all union constitution and bylaw provisions that are inconsistent with these provisions.

- Enforcement: Union members may sue for "appropriate" relief in Federal District Courts where the violation occurred or the union is headquartered. Any person violating these provisions is subject to criminal penalties—a fine of $10,000 or two years in prison, or both.

could ever administer a "federally legislated" bill of rights. It thinks none is necessary and says the Kennedy-Ervin bill in its original form was "a genuine bill of rights."

The AFL-CIO Building and Construction Trades Department agrees with the federation on all points.

Labor Secretary James P. Mitchell supports the AFL-CIO, at least on the necessity issue. He prefers to look at the "substance" of the entire piece of legislation and thinks the Administration labor bill, which contains no bill of rights, would be "far more effective" than the Kennedy Title I.

President Eisenhower, Senator McClellan, and the U. S. Chamber of Commerce, on the other hand, prefer a stronger bill of rights than Senator Kennedy's.

The danger of both approaches was flagged last week by the American Civil Liberties Union. Reversing a seven-year policy of supporting union self-regulation, it is now urging Congress to include a "moderate" bill of rights in any labor reform legislation it proposes.

Necessity for the inclusion, it says, "grows out of the failure of union constitutions to protect the rights of freedom of speech, press and assembly as guaranteed by the First Amendment."

It contends that a bill of rights—which it calls a "necessary evil"—should regulate union affairs only to the extent necessary to protect three basic rights: the right of union members to participate fully in the determination of union policies; the right to equal treatment within the union; and the right to full and fair hearings, including the right of appeal, in union disciplinary actions.

ACLU suggests that moderate measures be tried before "more extensive and drastic controls are imposed." It thinks the bill should be written in general terms, that it be subject to civil rather than criminal enforcement and that statutory commands on how unions should function be kept to a minimum.

Once the basic rights are guaranteed "unions should be left free to choose their own internal structures and policies," says ACLU.

None of the present proposals meets these requirements, and ACLU finds none it can fully endorse. It says all of them in one way or another impair the freedom they seek to promote and, in creating statutory rights for union members, sacrifices the rights protected by the federal Constitution.

In writing new legislation to protect the civil liberties of union members, we must guard against destroying other civil liberties, said the ACLU.

Teamsters Retain Local Support

Construction groups favor close ties with the teamsters union, which has cleared most of its hurdles

The ability of the teamsters union to increase its strength and prestige in the face of strong public criticism is partly explained by the local sentiment that prevails among various construction labor groups.

Last month, for example, an officer of the Dallas Building and Construction Trades Council, AFL-CIO, suggested that all building trades unions leave the AFL-CIO and join the teamsters union. A California Building Trades Council was, at the same time, granting a San Francisco teamster local's request for strike sanction.

In both areas, the teamsters have retained membership in the local councils despite the union's expulsion from the federation and the resulting ban on union affiliation with members of the expelled group.

Other construction union groups have formally asked the AFL-CIO to take the teamsters back in. Such requests have come from Houston and Long Island.

Reasons given for this kind of sentiment are twofold: The teamsters can produce and are valuable friends. Local units are not corrupt.

A California building trades official explains local refusal to sever ties with the teamsters this way:

"At Atlantic City, we took the position that the teamsters should not be dumped from the AFL-CIO and we still feel that way. We feel we should stick together out here. Remember, in San Francisco, and California in general, we do not follow the petty feuds that occur elsewhere. We have no trouble with corruption here and there is no reason to change anything that works so well."

The expulsion of the teamsters union occurred in December 1957. Since then, James Hoffa has been provisional president only. The union has been subject to the supervision of a court-appointed board of monitors and scrutiny by the McClellan committee.

Despite these developments and the unfavorable publicity that has resulted, the union has increased its membership from 1.3 million to 1.6 million.

These figures and local sentiment indicate that the AFL-CIO and McClellan committee handling of the teamster affair has merely served to strengthen the position of the union and of its provisional president.

The only significant threat still faced by either the union or Mr. Hoffa is the board of monitors. Although the validity of the monitor system has been affirmed by an Appellate Court, the monitors have done only one important thing: Prevent another convention that could make Mr. Hoffa the union's president with no strings attached.

Organizing Pressed in Hawaii

The AFL-CIO Building and Construction Trades Department has taken another step in its efforts to promote the organization of construction workers in Hawaii.

Richard Gray, president of the department, has named W. K. Eli, a "home grown" labor leader, as the new supervisor and director of the Honolulu Building and Construction Trades Council.

Mr. Eli's appointment was generally well received by both labor and management. It may possibly pave the way for a resumption of management talks with Mr. Gray on an industry-wide bargaining agreement for Hawaii.

Mr. Eli succeeds Jack C. Reynolds, a former West Coast labor leader. His duties and responsibilities are larger than those entrusted to Mr. Reynolds.

One of Mr. Eli's first problems will be to try to smooth over a leadership dispute among the carpenters—a dispute that threatened to lead to secession by the carpenters.

Meanwhile, efforts of the painters to organize Sawai Brothers Painting Co. have failed.

The union (Local 1791) picketed a $9-million Capehart construction project at Hickam Air Force Base in an effort to force the company (a subcontractor) to sign a labor contract.

The National Labor Relations Board intervened under an unfair labor practice charge and the case was settled when the union agreed to halt its picketing and to abandon its efforts to secure a labor agreement unless and until the union is certified.

(Labor continued p. 80)

Pay Raises Settle Strikes

Thousands of idle construction workers in Harrisburg, Pa., returned to work last month when the carpenters union agreed to accept a new three-year labor contract that grants a 37½-cent wage increase.

The carpenters, who have been on strike for 32 days, get a 7½-cent raise immediately and five cents more on November 1. In May 1960 and 1961 they will receive an additional 12½-cent increase. Before the strike, their scale was $3.10 an hour.

Another strike—by two pile driver union locals in Portland, Ore.—has ended. Under pressure from the international carpenters office, the Astoria and Portland pile drivers went along with a three-year, 53-cent-per-hour settlement already accepted by carpenter locals and three other pile drivers' locals in the area. The agreement has been reached in joint pile driver-carpenter negotiations with contractors.

Meanwhile, the threat of strikes in Philadelphia ended when bricklayers and hoisting engineers signed the last of the building trades' contracts to be negotiated.

For the first time, the bricklayers signed a three-year contract. It calls for wage increases totaling 40 cents an hour over the three years.

Employers and the carpenters union are discussing a similar contract to replace the present one, which expires next April.

The hoisting engineers agreed to a two-year contract that calls for a 3% increase retroactive to last April 30. For the first year, the raise averages 12 cents an hour in higher categories and 10 cents an hour in all classifications. The second year's increase will range from 11 cents to 13 cents an hour.

Unlike the bricklayers and hoisting engineers, Philadelphia steamfitters emphasized fringe and welfare benefits in their negotiation. They agreed to continue their present scale at $4.10 an hour in favor of a 15-cent increase in walfare payments, to 31½ cents per hour.

Among the still unsettled strikes is one in Huntington, W. Va., where hod carriers and laborers have struck over the issue of welfare payments. Some 3,000 workers have been idled as a result.

The union wants a 40-cent-an-hour raise over two years, 7½ cents an hour more for a health and welfare trust fund and what it calls a "model" hiring hall system.

Contractors are reported willing to meet these demands, but insist health and welfare benefits be paid directly to their employees rather than to a union trust fund.

Present hourly scale is $2.50 for laborers and $2.58 for hod carriers.

Elsewhere, carpenters in the four Bay area counties of San Francisco are currently working without a contract. The 16,000 carpenters involved are seeking a package wage increase of 76 cents and hour and other benefits. They have been offered 61½ cents an hour by the Associated General Contractors.

Labor in Brief . . .

• Thwarted on training funds--Construction industry efforts to compel allocation of National Training Act funds for related training of journeymen and apprentices failed when an industry-sponsored rider to an appropriations bill was removed last month by the Senate on a point of order.

• Tips on safety—The Research and Education Department of the International Brotherhood of Electrical Workers urges the union's locals to include these activities in safety promotion efforts: negotiate a safety clause in all labor contracts, establish joint labor-management safety committees, include safety instruction in all apprenticeship and job training programs.

• Will promote, not accept—Directors of the National Society of Professional Engineers have voted against fostering a technicians' organization within the society. But they voted to promote educational development, occupational guidance, industrial training and improved status for technicians.

• Caught on Davis-Bacon—The U. S. Air Force has withheld $10,000 from two Lockbourne Air Force Base concontractors and will distribute it to project workers who were allegedly entitled to, but did not receive, the required prevailing wage. The two firms were charged with classifying as laborers men who performed skilled work.

Safety Liability

General contractor canno shift liability to sub

The general contractor is responsible for taking safety precautions to protect the public for the entire duration of the job, not just that portion of the work he performs himself.

If a subcontractor fails to take proper safety measures on his portion of the work, the general contractor may be held liable for damages arising from the hazards.

A Connecticut factory owner hired contractor to remove old railroad track and install new ones across a publi highway abutting the factory. The co tractor was to replace the old roadbe with a concrete base to within 1½ in of the tops of the rails. The pavemer was then to be leveled with an aspha coating. The general contractor sub contracted the asphalt work.

After the concrete had been pourec but before the asphalt was placed, th rails protruded 1½ inches. No faciliti were provided for the public to use i crossing the work area.

While crossing the highway, a pe destrian caught his foot on a rail an was injured. This happened prior to th asphalt paving work. The injured pe destrian sued the general contracto He was awarded damages by the tri court, and this judgment was upheld i the appellate court.

The trial court found the contract negligent in leaving the street in dange ous condition without proper saf guards.

The contract was for the entire work said the court. Subcontracting the a phalt paving did not relieve the co tractor of responsibility.

The appellate court ruled: The co tractor contends that he is not liabl because he had completed his portion the work, and had it accepted by th factory owner, before the plaintiff wa injured. The fault with this claim that the defendant had not complete the work, even though the remaind was to have been done under subco tract.

The defendant's obligations und the contract do not end when he fi ishes that portion of the work he chos to do himself.

The defendant owes an obligation t the public and cannot relieve himself o liability by delegating part of the wor to someone else.

(1) Kisziw v. William P. Bray Com pany, 141 A. 2d 244, Supreme Court o Errors of Connecticut, April 29, 195

ANOTHER PRESTRESSED CONCRETE STRUCTURE

Normandy Elementary School, Jacksonville, Florida.
Architects: George Ryad Fisher, A.I.A. and Harry E. Burns, Jr., A.I.A. *Contractors for 4 schools:* 1) McMaines Construction Co., Jacksonville. 2) East Coast Construction Co., Jacksonville. 3) Bay Construction Co., Norfolk, Va. 4) Wm. S. Smith Construction Co., Jacksonville. *Prestressed Concrete Fabricator:* Capitol Concrete Co., Prestress Div., Jacksonville.

New Prestressed Concrete Florida Elementary School Wins Design Award

Low completed cost prompts School Board to build 3 additional schools of same design

The greatest single requirement for the Duval County elementary school was economy of construction. In close order came fireproofness and ease and economy of maintenance.

The structure is approximately 35,360 sq ft in area and contains some 39,000 sq ft of prestressed Double T roof slabs. Over-all, the school represents about 300,000 cu ft at the contract price of $297,000; the cost per sq ft being $8.40. That's the cost benefit... there are others.

At the Sarasota regional conference of the American Institute of Architects in 1958, only one school was recognized for an award among various types of buildings from four states. This was the school.

Further, the $8.40 cost per sq ft, together with the fireproof and maintenance-free character of the building, *so pleased the School Board that it has seen fit to build it, with slight modifications, on three additional sites.*

You see how the success of prestressed concrete repeats itself? This local acceptance of prestressed concrete is being duplicated throughout the nation. Not only in schools, but in office buildings, garages, warehouses, motels, bridges, piers, factories and transportation terminals.

Because Roebling pioneered in the development of prestressing elements and techniques in the United States, we have much to tell you and a wealth of information and data to share with you. Your inquiry can be as general as "...all about prestressed concrete," or as specific as "...tensioning elements and casting bed data." In any case, we will be glad to furnish you with whatever you wish. Just address *any* inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Consult Roebling ... *First* in the U. S.
with prestressing and tensioning elements

ROEBLING

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OFFICIAL PROPOSALS

Bids: July 16, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock a.m., advanced standard time, which is nine-thirty o'clock a.m., eastern standard time, on the 16th day of July, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Essex, Rensselaer & Washington (Rte. 9, 22, 73, 67, 7 & 22A)	R.C. 59-85	No. Hudson-Euba Mills, S.H. 5181, Br. #1; Essex-Willsboro, S.H. 1641, Br. #1; Keene Valley-Holts Cors., S.H. 8478, Br. #3; Valley Falls Village Conn., S.H. 8520, Br. #1; Raymertown-Hoosick Pt. 2, S.H. 5354, Br. #3, & Middle Granville-Hampton, S.H. 1937, Br. #1	....	Cleaning and Painting 6 Bridges	$1,100 Plans $5	$19,000
Greene (Rte. 23)	B.A. 59-1	West Approach; Rip Van Winkle Br.	0.35	Asphalt Concrete Pavt.	$2,100 Plans $5	39,000
Rensselaer	FASS 59-14	West Sand Lake-Poestenkill-Cropseyville Pt. 3 Co. Rd. Proj. S-486(3)	2.08	Asphalt Concrete Pavt. Prestress. Conc. Bridge 1 Span 54′	$25,000 $14,000	448,000
Schenectady (Rte. 7)	R.C. 59-73	Central Bridge-Quaker Street Pt. 2, S.H. 1029; Quaker Street Pt. 2, S.H. 105; Duanesburg-Quaker Street, S.H. 5551	7.84	Asphalt Concrete Pavt.	Plans $5	258 000
Warren (Rte. 9N)	R.C. 59-97	Lake George Village, S.H. 843 Lake George-Bolton Landing, S.H. 418	6.67	Asphalt Concrete Pavt.	$12,000 Plans $5	215,000
Washington (Rte. 4)	FARC 59-66	Hudson Falls Village, S.H. 1080 Sandy Hill-Fort Ann, S.H. 803 Proj. F-413(6)	8.83	Asphalt Concrete Pavt.	$32,000 Plans $5	570,000
Washington (Rte. 149)	R.C. 59-98	Hartford-Granville, S.H. 1783	6.25	Asphalt Concrete Pavt.	$10,000 Plans $5	182,000
DISTRICT No. 3, EARLE E. TOWLSON, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 38A)	FARC 59-53	Auburn-Owasco, S.H.614 Proj. F-642(3)	6.03	Asph. Conc. Pavt. = 6.01 Mi. Misc. Work = 0.02 Mi. Extend Exist. Conc. Slab Br. 1 Sp. 22′ Prestress. Conc. Beam Br. 1 Span 62′	$63,000 Plans $5	1,148,000
Oswego	M 59-6	Oswego Grain Elevator	....	Asph. & Cem. Conc. Pavt. on Pier Area	$1,000 Plans $10	18,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 5)	FARC 59-93	East Pembroke-Batavia, S.H. 586; East Pembroke-Pembroke Pt. 1, S.H. 5020; East Pembroke-Pembroke Pt. 2, S.H. 5090 Proj. F-933(4)	9.04	Asph. Conc. Pavt. = 9.02 Mi. Misc. Work = 0.02 Mi	$28,000 Plans $5	496,000
Genesee & Orleans (Rte. 5 & 18)	R.C. 59-88	Oak Orchard Pt. 3, S.H. 394, Br. #3; East Pembroke-Batavia, S.H. 586, Br. #2	....	Cleaning & Painting 2 Bridges	$800 Plans $5	15,000
Livingston & Wyoming (Rte. 20A & 39)	R.C. 59-94	Perry-Pine Tavern Cors. Pt. 1B and Pt. 2, S.H. 8433 Perry Center-Moscow Pt. 2, S.H. 1248	5.75	Asph. Conc. Ty. 1A Pavt.	$15,000 Plans $5	271,000
Monroe (Rte. 65)	FARC 59-82	Clover Street, S.H. 294 Honeoye Falls-Pittsford Town Line, S.H. 502 Proj. S-462(2)	8.82	Asph. Conc. Ty. 1A Pavt. = 8.79 Mi. Misc. Work = 0.03 Mi.	$25,000 Plans $5	458,000
Monroe (Int. Tour. Rte. 490)	FIC 59-6 FAC 59-9	Interstate Rte. Conn. 580, Rochester City; Eastern Expressway Pt. 1; East City Line Interchange & City of Rochester; Outer Loop Art. Highway (Highland Ave. to Int. Rte. 580) Proj. I-1107(11) & U-1093(4)	0.94	9″ Cem. Conc. Pavt. 2 @ 50′ Var. Wide = 0.94 Mi. (Asp. Conc. Ty. 1A & Ty. 2A on Interchange) 4 Hy. Seps. Comp. I-Beams 4 Sp. 321.5′, 3 Sp. 143.5′; 4 Sp. 182′ and 1 Sp. 62′; 1 Hy. Sep. Comp. Deck Girder 2 Sp. 234.4′; 2 RR Seps. Comp. I-Beams 5 Sp. 381.6′ and 3 Sp. 135′; 2 RR Seps. Thru Plate Girders 4 Sp. 352.7′ and 1 Sp. 57′	$275,000 Plans $10	4,964,000
Monroe	FAC 59-8 FASH 59-14	Rochester City Outer Loop: East Ave.-Winton Rd. N. Pt. 2; Rochester Outer Loop: East Ave.-Winton Rd. N. Pt. 2 (Blossom Rd. to Winton Rd. N.) Proj. U-1097(5)	1.88 (2.12 Acc.)	9″ Cem. Conc. Pavt. 2 @ 24′ Var. Wide = 1.88 Mi. Asph. Conc. Pavt. Ty. 2A = 2.12 Mi. 4 Hy. Seps. Comp. W-F Beams, 3 Sp. 167.5′, 3 Sp. 150.5′, 4 Sp. 193.4′ & 4 Sp. 239.9′ Reinf. Conc. Arch Br. 1 Sp. 26.7′	$179,000 Plans $10	3,256,000
Monroe (Rte. 253)	FARC 59-101	Henrietta Station-South Arab Street, S.H. 1639 Proj. S-562(1)	3.04	Asph. Conc. Typ. 1A Pavt.	$12,000 Plans $5	222,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17J)	FARC 59-96	Chautauqua-Mayville, S.H. 1617 Proj. S-557(1)	0.89	Asph. Conc. Pavt. = 0.84 Mi. Misc. Work = 0.05 Mi.	$15,000 Plans $5	263,000
Erie (Rte. 33)	FARC 59-92	Genesee Street Pt. 3, S.H. 1214 Proj. F-377(18)	0.19	Asph. Conc. Pavt. = 0.17 Mi. Misc. Work = 0.02 Mi.	$4,000 Plans $5	67,000
DISTRICT No. 7, ROBERT W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Int. Tour. Rte. 81)	FITS 59-10	Interstate Rte. 505 Sect. 7C-1, F.I. S.H. 57-2; Interstate Rte. 505, Sect. 7AB-3, F.I. S.H. 57-21; Adams-Henderson Pt. 1, S.H. 183; Adams Village: Railroad St. S.H. 181 Proj. I-81-3(12)140	6.58 (0.54 Acc.)	Traffic Signs & Delineators	$1,500 Plans $5	26,000
Jefferson (Rte. 11 & 37)	FATS 59-9	Watertown-Theresa Pt. 1, S.H. 565; Watertown-Philadelphia Pt. 1, S.H. 5651 Proj. U-F-572(6)	1.03	Traffic Signs	$1,400 Plans $5	25,000
DISTRICT No. 8, KURT F. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange	FASS-RC 59-19	Slate Hill-Middletown Co. Rd. 49 Project S-822(2)	4.44	Bit. Double Surf. Treat. Graded Gravel	$19,000 Plans $5	331,000
Ulster (Rte. 208)	FARC 59-83	Wallkill-Ireland Corners, S.H. 8262; Ireland Corners-New Paltz, S.H. 9203 Proj. F-416(5); F-613(12)	5.38	Asph. Conc. Pavt. = 5.35 Mi. Misc. Work = 0.03 Mi.	$50,000 Plans $5	920,000
Westchester (Rte. 9)	FAC 59-7	City of Peekskill: U. S. Route 9 Arterial Highway Proj. F-394(16)	1.72	Asph. Conc. Pavt. Rehabilitation Rig. Frame Steel Viaduct 6 Sp. 502′; Rehabilitation Rig. Frame Encased I-Beam, 4 Sp. 47.9′; Rehabilitation I-Beam 2 Sp. 82.8′	$15,000 Plans $5	276,000
DISTRICT No. 9, JOSEPH C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 17)	R.C. 59-86	Deposit-Hales Eddy, S.H. 5045	3.05	Asphalt Conc. Pavt. Repairs to Exist. Bridge 226.5′ Span.	$8,000 Plans $5	148,000
Otsego (Rte. 205)	R.C. 59-95	West Oneonta-Hartwick, Pt. 2, S.H. 8387	2.30	Asph. Conc. Pavt. Repairs to Exist. Bridge 26′ Span	$8,000 Plans $5	136,000
Otsego (Rte. 28)	R.C. 59-99	Schuyler Lake-Cooperstown Pt. 2, S.H. 8333	2.01	Asph. Conc. Pavt.	$9,000 Plans $5	152,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	B.P. 59-73	Atlantic Beach, Town of Hempstead	1.80	Beach Protection (Artificial Beach Nourishment)	$15,000 Plans $10	288,000
Suffolk (Rte. 25A)	FARC 59-87	Smithtown-Port Jefferson, S.H. 5232A Proj. S-430(1)	0.35	Asph. Conc. Pavt. = 0.09 Mi. Drainage & Misc. Work = 0.26 Mi.	$10,000 Plans $5	177,000

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the proviisons of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS of Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: July 21, 1959.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS FOR CONSTRUCTION OF THE 345 KV TRANSMISSION LINE BETWEEN NIAGARA SWITCHYARD AND ROCHESTER SUBSTATION FROM NIAGARA COUNTY TO MONROE COUNTY NEW YORK
SPECIFICATIONS NO. PA-9-2
CONTRACT AL-2

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the Construction of the 345 KV Transmission Line Between the Niagara Switchyard and the Rochester Substation, From Niagara County to Monroe County, New York, until 10:30 A. M. Eastern Daylight Saving Time, on the 21st day of July, 1959, at the Authority's Office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated as follows:

Clearing Right of Way	150 Acres
Chemical Treatment of Right of Way	150 Acres
Erection of Steel Tower Structures	2800 Tons
Stringing Bundled Conductors and Ground Wire	70 Miles

The major items of material will be furnished by the Authority.

The Construction of the Transmission Line shall be completed on or before July 1, 1961.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: July 21, 1959

Contract BP-130.005

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
DEMOLITION OF BUILDINGS IN THE VICINITY OF FURMAN AND JORALEMON STREETS

Sealed proposals for the demolition of buildings in the vicinity of Furman and Joralemon Streets at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 21, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, July 2, 1959

OFFICIAL PROPOSALS

Bids: July 14, 1959

For the Sale of Tunnel Gates and Appurtenant Metalwork Salvaged from Long Sault Dam Near Massena, St. Lawrence County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
RE-ADVERTISEMENT FOR PROPOSALS
SPECIFICATIONS NO. PA-5-15080
ST. LAWRENCE CONTRACT NO. P43

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals from prospective purchasers of Tunnel Gates and Appurtenant Metalwork Salvaged From Long Sault Dam, near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Daylight Saving Time on the 14th Day of July, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The quantities of the principal items of equipment and material to be sold are as follows:

27 Fixed Wheel Gates, Designed for Closure of 16 x 19 Foot Tunnels under 80 Foot Head.
Approx. 150 Tons 1½" x 8" Gate Suspension Bars of Assorted Lengths, with Pins.
1 Gate Lifting Beam Assembly.
28 36" WF 160 Beams, Each Approximately 58 Feet Long.
Approx. 25 Tons Miscellaneous Fabricated Structural Steel.
Approx. 5,300 Sq. Ft. ⅜" Thick Checkered Steel Plate.
Approx. 2,000 Lin. Ft. 1¼" Steel Pipe Hand Railing.

All equipment and material which is purchased shall be completely removed from the St. Lawrence Power Project on or before December 31, 1959.

Bids will be considered on any number of gates from one to twenty-seven and on any bid item or combination of bid items for appurtenant metalwork.

Plans, Specifications and Proposal Forms for the equipment and material to be sold may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at no cost, upon written application. Plans, Specifications and Proposal Forms for the equipment and material to be sold will be on file in the Authority's Office and in the Offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the total amount of the bid.

The right is reserved to make award on any bid or combination of bids and to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: July 14, 1959

Construction of Railroad Embankment and Miscellaneous Structures

Sealed proposals will be received at the office of Wm. J. Hedley, Chief Engineer, Wabash Railroad Company, Railway Exchange Building, St. Louis 1, Missouri, until 12 noon (C.S.T.) on the 14th day of July, 1959, for constructing approach fills and miscellaneous structures adjacent to a double track railroad bridge now being constructed over the Calumet Sag Channel near Palos Park, Illinois. Plans, specifications, and other information concerning this project can be obtained from the office of the Chief Engineer, Wabash Railroad Company, Railway Exchange Building, St. Louis 1, Missouri, upon payment of $10 per set.

Read the Official Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: July 23, 1959

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 23rd day of July 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No	Name
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York		
St. Lawrence (Rtes. 37 37A & 87)	FATS 59-11	City of Ogdensburg: Route 37 Arterial, FAC 57-16 Ogdensburg: Route 37 Connections, FASH 57-19 Ogdensburg-Morristown, Pt. 1 S.H. 878 Ogdensburg-Waddington, Pt. 1 S.H. 5497 Ogdensburg-Waddington, S.H. 9357 Project U-650(8)

Miles	Type	Deposit	Estimated Cost of Work
6.13	Traffic Signs and Delineators	$1,900 Plans $5	$34,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: October, 1959

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand

INVITATION FOR BIDS—No. YS-3-2

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing and delivering the following goods, equipment, and materials either fob Contractor's shipping point or cif Bangkok Wharf, Thailand, for the Bhumiphol Dam and Power Plant, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, Invitation for Bids—No. YS-3-2, for:

Three (3) power transformers each 56,000 kva, single phase, 50 cycles, class FOW, outdoor, 230-13.2 kv, complete with oil, accessories, and spare parts.

Bids will be issued in July 1959, and opened in early October 1959. Copies of Contract Documents, Invitation for Bids—No. YS-3-2 may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1940 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $10.00 for each copy of the Contract Documents requested. The remittance is nonreturnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

U. S. Government

General Services Administration, Public Buildings Service, Washington, D. C., June 24, 1959—Sealed bids for construction of United States Court House and Federal Office Building, Charleston, West Virginia, will be received until 2:00 PM, EDT, August 4, 1959, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S. W., Washington 25, D. C., and then publicly opened in Rm. 7122 at the above address. Upon request, Public Buildings Service, Rm. 1308, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $75.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $75.00. Deposits will be refunded for such sets if returned in good condition within thirty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings General Services Administration.

U. S. Government

General Services Administration, Public Building Service, Washington, D. C., June 23, 1959—Sealed bids for construction (Except elevator plant and escalator plant) of Museum of History and Technology, Smithsonian Institution, Washington, D. C., will be received until 2:00 PM, EDT, August 4, 1959, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S. W., Washington 25, D. C., and then publicly opened in Rm. 7122 at the above address. Upon request, Public Buildings Service, Rm. 1308, GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397, will furnish three sets of bidding material to General Contractors interested in bidding the complete project. Three additional sets may be obtained by depositing $200.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $200.00. Deposits will be refunded for such sets if returned in good condition within thirty days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

Sealed bids for mail-flo equipment, Phase III, at the U.S. Post Office & Annex, (33rd St. & 8th Ave.), New York, N. Y., will be received until 2:00 P.M., EDST, July 21, 1959, and then publicly opened. Bidding material may be obtained after June 30, 1959 from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5215) will be received at Camp White, Oregon, until 10 a.m., Pacific Standard Time, August 4, 1959, for furnishing labor and materials for major structures for East Lateral rehabilitation, Talent Division, Oregon, Rogue River Basin Project. Location south of Medford, Oregon. Principal items are 17,520 cu. yds. excavation; 11,270 cu. yds. backfill; 600 cu. yds. concrete in structures; 2,833 lin. ft. pretensioned concrete pipe, 33- to 54-inch; and other work. Completion time 560 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; P. O. Box 386, Camp White, Oregon; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 1:00 P.M., E.S.T., August 14, 1959 and at that time publicly opened for the following: Furnishing and installing between 21 and 39 electric towing locomotives and 3 electric cranes for use on Panama Canal locks, to replace the existing electric locomotives and cranes. Plans and specifications are available for examination in the Procurement Office, Panama Canal Company, 21 West Street, New York 6, N. Y. These data may be obtained upon payment of $25.00 deposit which will be refunded when data are returned. For further information, contact this office. Telephone Bowling Green 9-5380, extension 73. Reference: PC 59-71.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division,
Engineering News-Record
Class. Adv. Div.,
P. O. Box 12, N. Y. 36, N. Y.

EMPLOYMENT OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch in measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

**JULY 16TH
ISSUE
CLOSES
JULY 6TH**

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

BUILDING DESIGNERS

Positions available in consulting firm for Engineers, Architects and Architectural Draftsmen experienced in building design. Send personal information and experience record to:

**STANLEY ENGINEERING COMPANY
Hershey Building Muscatine, Iowa**

*ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12.
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.*

• POSITIONS VACANT

Resident Engineer Wanted. Graduate engineer with experience in supervision of construction on water, sewerage, steam power and/or building construction. Location generally midwest, but assignments may be to other areas of U. S. Established midwest consulting engineering firm. Reply in detail to P-1293, Engineering News-Record.

Experienced Architectural Draftsmen. Excellent opportunity with established consulting firm in Middle West. State education, experience and required salary. Reply to P-1545, Engineering News-Record.

Construction Superintendent experienced in all phases of large & heavy building projects. Submit detailed resume of experience and salary desired. P-1927, Engineering News-Record.

Wanted: Civil Engineer. Experienced. field, permanent position, growing construction company, near Poughkeepsie, New York. P-1896, Engineering News-Record.

Wanted: Estimator and Field Engineer, experienced, permanent position, growing construction company, near Poughkeepsie, N. Y. P-1921, Engineering News-Record.

Senior Estimator—primarily highway, five years or more experience covering takeoff, field exploration, pricing and handling subcontracts. Salary commensurate with ability. Location Midwest. Send resume and picture. P-1890, Engineering News-Record.

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Ambitious, aggressive, dependable, use no intoxicants, willing to start in the field of industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Top wages. Martin K. Eby Construction Co., Inc., P.O. Box 1679, Wichita, Kansas.

Civil engineers and civil draftsmen with 2 to 3 years office experience for responsible permanent position with progressive consultants in San Diego rural area. Salary range $500. to $800. Send full resume and availability to P-1968, Engineering News-Record.

Project Manager, highway and railroad, with experience in supervision of jobs in the one to four million dollar size, including excavation, paving, bridges, utilities. Work in Ohio-Indiana area. Submit resume of qualifications and salary required. P-1977, Engineering News-Record.

Engineer-Estimator to work out of Omaha, Nebraska on heavy construction and highway estimates. Submit resume of qualification and salary expected. P-1973, Engineering News-Record.

Paper Mill is looking for a graduate engineer, under 45 years of age with a B.S. degree in Electrical Engineering and a minimum of 5 years experience in Plant Electrical Engineering. This man should have experience in medium voltage generation and distribution and low voltage distribution. He must have a good working knowledge of medium and low voltage motor control. Some experience in industrial lighting is also desirable. This engineer is to have complete charge of all plant electrical maintenance in a plant that generates 20,000 KW of its own power and distributes it to departmental processes ranging from wood processing to three paper machines. He will be responsible in this position to the Plant Maintenance Superintendent. Please send resume including education, experience, and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Mich.

(Continued on the following page)

CIVIL ENGINEERS

Earth Fill Dam Design

**work in San Francisco
Bay Area**

Kaiser Engineers, world-wide engineer constructors, has a truly unique assignment for you if you have a CE degree and 3 to 5 years' experience designing earth-fill and rock-fill dams.

Current project you'd be on involves work in Kaiser Engineers' Oakland home offices on overseas hydro-power dam—one of many KE projects.

Here's rare opportunity, top salary, a job with challenge, California living at its finest and extra benefits (including moving allowance) stacked end to end. Send resume today in confidence to Mr. W. C. Thomas, at address below.

**KAISER ENGINEERS
1924 Broadway Oakland 12, California
Division of Henry J. Kaiser Co.**

Heavy Construction Superintendent

Experience required in pile driving and marine construction work. Midwest location. Send resume and salary requirements in first reply.

P-1950, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Position Available

METROPOLITAN DADE COUNTY, FLORIDA

Position:
Traffic Planning and Design Engineer, Department of Traffic and Transportation.

Requirements:
Graduation from recognized school in civil engineering, and experience in highway geometric and bridge design and cost estimating.

Salary:
$534 to $680 per month with fringe benefits. Civil Service.

Apply:

**DADE COUNTY PERSONNEL DEPARTMENT
2600 West Flagler St. Miami 35, Florida**

CONTRACTORS ENGINEER

WANTED

College degree in Engineering or equivalent in experience: Job consists of estimating, purchasing, and administering jobs from the office. Location out-state Michigan. Give age, outline of education and experience, salary expected and snapshot if available. Write

P-1965, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

BUILDING PROJECT ENGINEERS

Permanent positions are available in our Construction Engineering Division located in Chicago for experienced engineers ages 30-40.

Applicants must be graduates in Architectural, Civil or Mechanical Engineering and have at least five years experience in developing building designs and layouts for new or remodeled facilities. Some field experience on construction projects is required. Experience in soils and structural engineering or heating, air-conditioning and other building mechanical facilities will be helpful in one or the other position.

Send complete personal, experience and salary data to:

Mr. W. J. Toppen
**CONTINENTAL CAN COMPANY, INC.
7600 South Racine Ave. Chicago 20, Ill.**

Structural DESIGNERS ENGINEERS

At least 10 years responsible design experience in structural steel—concrete—pressure vessels for:

**OIL REFINERIES
STEEL PLANTS
HEAVY INDUSTRY**

Permanent employment at our Cleveland offices.

Send detailed resume to

**G. VICTOR HOPKINS
ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio**

EMPLOYMENT OPPORTUNITIES

• POSITIONS VACANT

(Continued from preceding page)

Field Office Engineer under 30 for Heavy Construction Project in East. Assist. Supt., layout work and make Quantity Computations. Permanent position. Excellent chance for advancement to Superintendent or Project Manager. P-1936, Engineering News-Record.

Sanitary Engineer to direct Division of Sanitation with generalized program in well established County Health Department. Population: 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Cattaraugus County Health Department, 302 Laurens Street, Olean, New York. Salary: $6,564-$7,620.

Experienced Estimating Engineer — familiar with general contracting, semi-heavy and industrial construction, seawalls, docks, bridges and coffer-dams. Permanent position for right man—with established construction company in West Palm Beach, Florida. Salary dependent upon qualifications. Send resume to The Murphy Construction Co., P. O. Box 825, West Palm Beach, Florida.

Chief Engineer-Estimator. Well known and established Massachusetts corporation desires man qualified by experience and education for estimating and prosecution of highways, bridges, foundation, dams, etc. Please submit resume and present salary. P-1994, Engineering News-Record.

Reinforcing Steel Estimator for growing Bar Fabricator. Good starting salary with usual benefits. Modern Facilities. Apply P-1993, Engineering News-Record.

Erection Engineer: Graduate preferred — Permanent position with large N. E. Erector. State salary, resume, and starting date in reply. P-2018, Engineering News-Record.

Mechanical & Electrical Engineers, GS-11 for Watervliet Arsenal, N. Y. Must have engineering degree or Prof. Eng. License, 3 yrs. eng. experience. Also, Mechanical Engineer; GS-9 for N. Y. C. with 2 yrs. experience. Write Personnel Branch, U. S. Army Engineer District, 111 E. 16 St., N. Y. 3, N. Y.

Alaska Opportunities. Positions open for top construction supervision and engineers for large steam power plant project in Alaska. Excellent opportunities for qualified men. Send resume of education and experience to: Empire Gas Engineering Company, Post Office Box 1738, Atlanta 1, Georgia.

Civil Engineer—To teach in Midwest State College Surveying and Topographical Drafting Program. Phone or write: Dean Fred Swan, Ferris Institute, Big Rapids, Michigan.

Project Manager—for large New York City General Contractor, operating in several states. Must have demonstrated performance on high-rise reinforced concrete apartment house construction. Will be responsible for technical and administrative direction of project operations, such as change order negotiations, sub-contractor coordination, direction of the General Contractor's labor force, processing of owner and sub-contractor requisitions, handling of claims, preparation of schedules and progress reports. Complete charge of field office personnel. Initial assignment in the Mid-West. Excellent opportunity for right man. Salary commensurate with experience. Submit detailed resume, stating current earnings, salary requirements and availability. P-2019, Engineering News-Record.

• POSITIONS WANTED

Reliable man 35 years in construction. Experienced in rock blasting and sewer excavation and tunneling. Would like position in supervisory capacity. Salary $18,000. Write A.B. Izzo, 827 Morris Park Avenue, Bronx, New York.

Sales Engrg. or Management Opportunity Wanted by P.E., BSCE, Age 31, Experience: 3 yrs. hvy. industrial constr. field engr., 3 yrs. responsible structural design. PW-1926, Engineering News-Record.

Contractor's Engineer, 52, BS in CE, P.E. N.J. Heavy Const: bridge piers, found., deep excav., form work, cost, take-off qtys.; assist. with bid. PW-1928, Engineering News-Record.

Civil Constr. Engr.—BSCE; seeks planning & field opportunity with consultant and or general contractor; 2 yrs. hvy. constr., asst. job engr.; 8 yrs. U. S. Gov't., civil & constr. engr. for o'seas constr. mil. posts & bases in Austria, Turkey & France (incl 4 yrs. as Resident Engineer). Reply P. O. Box 578, Yonkers, N. Y.

• POSITIONS WANTED

Construction Executive And Administrator. Twenty-two years in responsible charge of the construction of Industrial, Commercial, Public and Military Installations, including factories, super-markets, schools, Niki Installations, Atomic Energy Work, refineries, sewage and water treatment plants and other light and heavy construction. Competent graduate Engineer with experience in Civil, Mechanical and Marine Engineering fields. Capable estimator, Administrator, Purchasing Agent and Project Manager, desires connection with progressive firm in Middle Atlantic States Area. Available July. PW-1857, Engineering News-Record.

Materials and Soils Engineer—BSCE—Over 10 years experience in construction of highways, toll roads and dams with both consultants and public agencies. PW-1985, Engineering News-Record.

Young Civil Engineer-2 years general field experience. Desires heavy construction field work. Preferably overseas. PW-1938, Engineering News-Record.

Bituminous, Soil, Concrete Paving Technologist. ICS Graduate. 20 years with Toll-roads, overseas air-ports, city streets, highways, dams field, office and laboratory. Single, 47. Immediately available. Expert in scientific design of asphaltic mixtures. A. B. Hart, 809 Arlington, Jackson, Miss. Phone FI-2-1239.

Teaching or advisory. PhD struct. eng. 10 years research and teaching experience. Past 6 years successful industrial design and consulting. Age 42. Present income $12-$15,000. Resume available. PW-1970, Engineering News-Record.

Const. Executive-Gen. Supt. Age 38. Managed Heavey const. Co. 12 yrs. Roads, Airports, earthmoving, foundations, etc. Estimating, organizing, completing. Negotiations for extras etc. Prefer to associate small or medium Co. to manage or take load off busy owner. Will relocate. $10-$15,000. PW-1983, Engineering News-Record.

Construction Executive and General Superintendent, 25 years experience in commercial, industrial, public buildings, and mass housing, experience includes all phases of construction, job management, purchasing, subcontracting, processing of claims, etc. Desire permanent relocation eastern U. S. PW-1006, Engineering News-Record.

Millwright Supt.-20 yrs. experience, go anywhere, best references from national contractors. Resume on request. PW-1947, Engineering News-Record.

Grad. BCE, Age 29, Single Municiple, Construction Engr. 3 years. Excellent Spanish, foreign position desired. Resume on request. PW-1986, Engineering News-Record.

• POSITIONS WANTED

Executive, thoroughly experienced buildings and Heavy Construction, open for connection requiring top man to assume full responsibility. Minimum $15,000. C. O. Sutherland 47 Rich Avenue, Mount Vernon, N. Y. Tel. MO 4-7927.

Civil Engineer—BSCE '58—age 28—experience in building construction and estimating. Desires work in design or building construction. Will relocate. PW-1979, Engineering News-Record.

Project Manager, Proven 20 Year Record heavy construction. U.S. and foreign. PW-1883, Engineering News-Record.

Foreign or Domestic—Top level tunnel superintendent. Age 46—background of successful tunnels, shaft's, caissons, underground powerhouses, well versed cost wise, can get top production—help estimate. Resume on request. PW-2001, Engineering News-Record.

Executive, 23 Years Top Level Management and administration all phases of heavy construction. PW-2012, Engineering News-Record.

Civil Engineer, 26, BCE'55, EIT-NY, Single, Navy CEC Officer, Heavy constr. exp. Seeks field position heavy constr. Loc. anywhere incl. o'vseas. Avail. Mid-Aug. PW-2006, Engineering News-Record.

Registered C.E. Many years const. experience. Desires position in field office of contractor in N.E.U.S.A. PW-2005, Engineering News-Record.

Civil Engineer, BS, 28, licensed, desires permanent position, with some field work, with small or medium sized contractor or allied organization. Experience includes 3 yrs. of steel and concrete design, preparation of plans, quantity take-off, detailed checking; 2 yrs. in Corps of Engrs. PW-2004, Engineering News-Record.

Construction Engineer with nation wide firm desires change. Age 30. Supervisory experience on industrial and commercial buildings. Some earth work. No degree but lots of experience. Will relocate stateside or foreign. PW-2013, Engineering News-Record.

Aluminum And Steel Curtain Wall Sales Engineer—available July 1st. Ten years experience as Regional and district Manager midwest and Eastern United States. PW-1992, Engineering News-Record.

Material Eng. available for work soils asphalt concrete. 12 years experience. Antonio Del Valle, 783 9th Ave., Apt. 3R, N. Y. C., N. Y.

Rock Supt. or Asst. Supt. on heavy construction. 25 years experience. Will travel. Available now. PW-2014, Engineering News-Record.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

Send New ADS or Inquiries to Class. Adv. of Engineering News-Record, P. O. Box 12, New York 36, N. Y., For July 16 Issue Closing July 6

• BUSINESS OPPORTUNITY

Medium sized eastern Consulting Engineering firm is interested in expanding its operations in the United States by merger or purchase of an established engineering practice. BO-1991, Engineering News-Record. Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

FOR SALE

CONTRACTORS BUSINESS

Complete physical plant of average sized general contractor including warehouse with office, yard with sheds, truck, equipment, materials and office equipment.

Location: Eastern central New York.

Reason for sale: Health and retirement.

Price: By negotiation. This is a real opportunity for a young man or men with small capital to either acquire a going business or expand a present business without paying for cash assets. Everything will be sold in a package cash deal as far as possible and at a low price.

BO-1961, Engineering News-Record
Class. Adv. Div., P. O. Box 12,
N. Y. 36, N. Y.

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1—Worthington 500 Ft. Portable Air Compressor Mtd. On 4 Rubber Tires, Caterpillar D-13000 Engine. $6,500
6—Le-Roi Portable Air Compressors Mtd. On 2 Rubber Tired Wheels 105 Ft. Capacity (ea.) $1,600
1—Worthington 210 Ft. Air Comressor Mtd. On 4 Pneumatic Tired Wheels Gas Engine. $2,100
1—Keisler 2 Yd. Rehandling Clam Bucket. $1,100
1—Bay City 1 Yd. Dragline Bucket Good Condition. $900
1—Johnson 25 Ton Material 2 Compt. Bin W/Scales & Hopper Complete. $2,400
1—Fruehauf 25 Ton Trailer 8 Tires 8 Ft. Wide W/GM Cab Over Engine Tractor & Tulsa Winch Complete. $9,000
1—Jaeger 8? Centrifugal Pump Mtd. On 4 Steel Wheels W/6 Cyl., Gas Engine Also Suction & Discharge Hose. $2,000
1—Gorman-Rupp 6" Pump Mtd. On 2 Rubber Wheels Also Suction & Discharge Hose. $1,500
2—Gardner Denver 500 Ft. Stationary Air Compressor Units Mtd., On Steel Skids W/150 H.P. Electric Motors Direct Connected. (ea.) $4,000
3—Electric 24" 6 Ton Locomotives W/Battery, Charger & Panel Complete With 6 Batteries In Perfect Condition. $19,000

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Complete structural steel for 3-Girder bridge, H20-S16 loading Spans — 100′-0″ — 140′-0″ — 180′-0″ — 140′-0″. Girders 8′-0″ deep—adequate for 30′-0″ roadway. Bridge only seven (7) years old—like new—matchmarked—FOB cars in Montana.

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1—NORTHWEST 80-D SHOVEL, also dragline attachments & buckets
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SINGLE DRUM S/N 15350 CUMMINS DIESEL. GOOD CONDITION, WILL STAND RIGID INSPECTION. $6500.00

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Two Bucyrus-Erie 54-B's
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Completely Rebuilt

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Phones: Diamond 4-3126 and Diamond 2-2913

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9W Bucyrus-Erie Dragline, 8½ yd.
5W Bucyrus-Erie Dragline, 5 yd.
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SHOVELS—DRAGLINES—CRANES
(All sizes, makes, Crawler and walking type)

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22 Ton Rear Dumps

3-63TD, GM 300 H.P. engine, automatic trans., year 1955. 7-46TD, Cummins 300 H.P. engine, 10 speed trans., year 1952 & 1953. 1-8TD, Cummins 275 H.P. engine, 5 speed trans., year 1948. Subject to prior sale or disposition.

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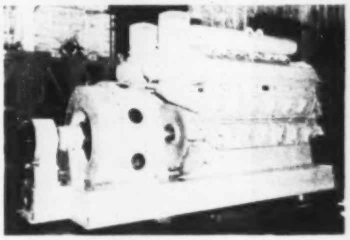
750 kw GM DIESEL ENGINE GENERATOR SETS



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One Model M7 Mixer-mobile
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Complete 16 ft. Diameter Tunnel Spread

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STEEL SQUARE COLUMN CLAMPS

1500 Sets 36" x 36"

FS-1962, Engineering News-Record
Class. Adv. Div., P. O. Box 12,
N. Y. 36, N. Y.

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Editorials

Forget Federal Aid

SCHOOL CONSTRUCTION must be stepped up if the required number of classrooms for elementary and secondary school pupils is to be provided. It is estimated that the current rate of construction will leave us 68,000 rooms short at the end of the next five years.

Congress has been wrestling with an aid-to-schools bill, but, as has been the case for several years past, is getting nowhere. There is just the possibility that were this perennial hope for federal aid removed, fewer local school bond elections would be lost. Actually, the estimated 68,000-room deficit is only 16%. States and localities could make that up if they knew they had to.

Schools, almost more than anything else, are state and local responsibilities rather than federal. Moreover, whatever part of the responsibility for their financing is turned over to the federal government is bound to cost the states and localities more than if they did the job themselves. For when money is sent to Washington and brought back again, some is always lost in transit.

Aid-to-education in the form of scholarship grants or loans may be a necessary federal activity in part. But the necessity for school construction to be federally aided has not been proved. In view of Congressional inability to agree on federal aid, it would be the better part of wisdom for states and localities to forget it and finance their own schools. Then Congress could forget it, too.

Unsubstantiated Claims

MORE AND MORE, state highway departments are building up their staffs to reduce dependence on consulting engineers. The usual reason given is that force account designing can be done more cheaply, and sooner or later a claim is made that such and such an amount has been saved. The details of how such saving was made are seldom given, that the consultants' reactions range from mild doubt to wrathful charges of duplicity.

One consultant has suggested that unsubstantiated claims of savings should not be published. We would not agree, in principle, that statements by responsible public officials should thus be censored, but would concur in a view that the public interest would be better served if cost-saving claims were proved. After all, it is the public's money that is involved, and the public has a right to know that it is being spent wisely.

Unsubstantiated claims raise doubts, and these are increased further by the questions consultants raise as to how the savings were figured. Are proper allowances made for rent, retirement plans, vacations, sick leave, equipment and other such items, which have to be included in the consultant's fee? Are the designs that are turned out, carefully studied for construction economies? Since design costs should normally be only about 5% of the construction costs of a project, the consultants point out that a very small unnecessary increase in construction cost could quickly wipe out an apparent initial saving in design charges.

The consultants can also point to such studies as those reported by the Hoover Commission, which conclude that design by consultants is generally cheaper than when it is done by a public agency's own forces.

It must be assumed that state highway departments want to do the best and most economical job possible. To be sure of this, they should know their costs accurately, and then proceed with the method that promises the best results and the greatest economy. If they know their costs accurately, it should be easy to substantiate any statements they may wish to make about savings. But unsubstantiated claims raise too many doubts.

Monument to Construction

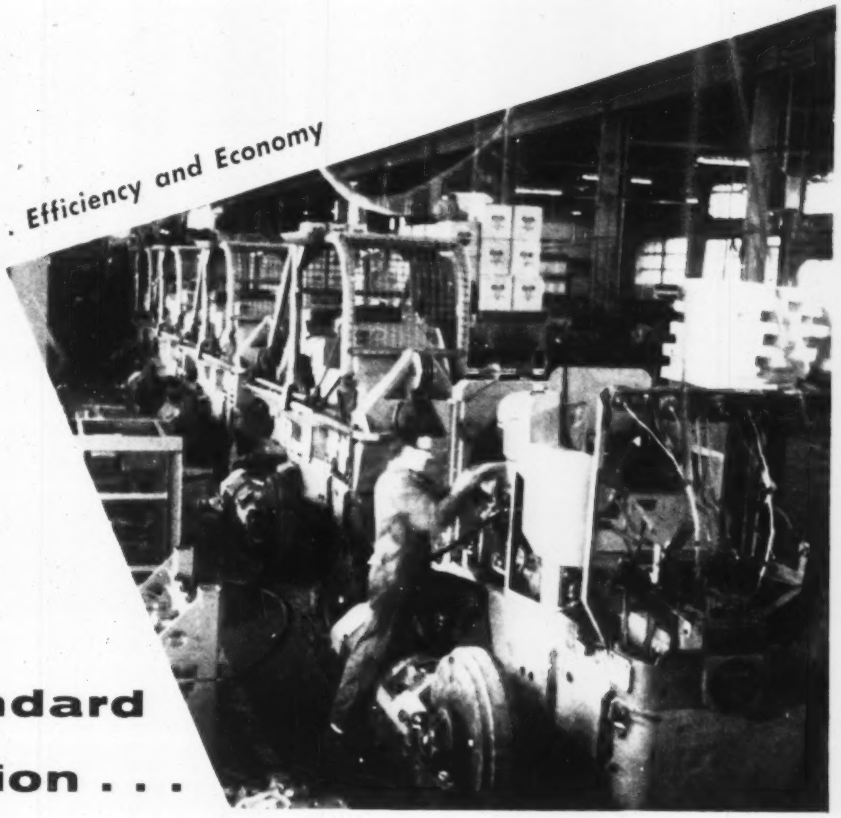
MIDST ALL THE POMP AND CEREMONY that a Queen arriving by royal yacht can create, big and little officialdom from the U.S. and Canada joined British Royalty last week in acclaiming the St. Lawrence Seaway and Power Project, which former President Herbert Hoover has called very simply, "the greatest engineering project in the world."

This, it may well be. In any event, from the time work began five years ago, its design and construction has justified thirty articles in this journal (ENR July 10, 1958, p. 21).

Last week, the engineers, contractors and workmen, who once formed a 22,000-man force on the combined power and navigation project, were mostly gone from the St. Lawrence Valley. A few engineering representatives of each of the owner agencies were present, but most of the contractors had moved on. They perhaps found too little to celebrate in their rugged St. Lawrence experiences to make Massena attractive. Most of the workmen, too, were absent, although the area's hundreds of mobile homes indicate many have stayed, perhaps to work in the valley's industrial plants.

But those who created the project were not entirely forgotten. Indeed, Robert Moses, Chairman of the Power Authority of the State of New York, called the International Friendship Monument, which the Queen and Vice President Nixon unveiled on the Moses-Saunder Power Dam, "a recognition of the Canadian and United States' engineers, contractors and workmen." And so it is. The St. Lawrence project is a monument to construction and a symbol of what the construction industries of two nations can do. Both those industries can be proud of their work, and particularly those individuals and firms whose know-how and energies created the monument.

THE BIG E . . . Efficiency and Economy



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